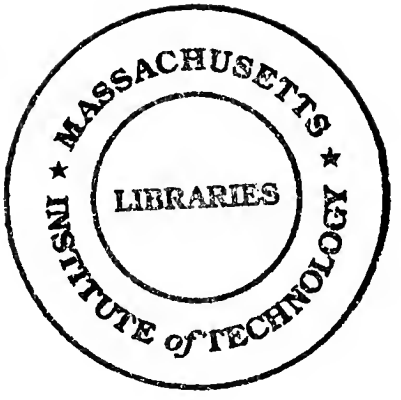
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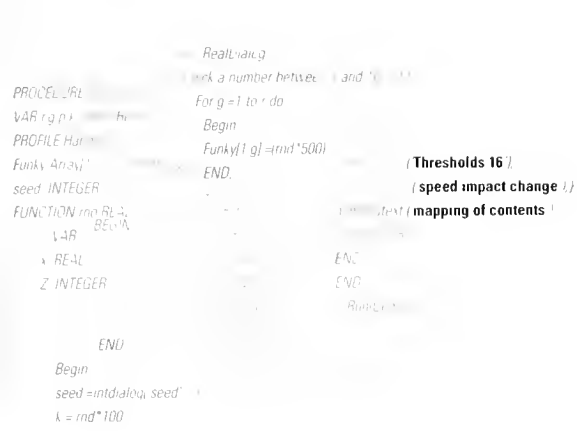
The cover art for *Thresholds* 16 is based on computer generated simulations of an epigenetic landscape using genetic algorithms. This project is part of a research program concerned with end-user programming to effectively relate computational thinking and the design process. The research is being conducted at MIT by the Nonlinear Architecture Group: Peter Testa (Architecture) and Una-May O'Reilly (AI Lab). The research software was developed in AutoLisp by Girish Ramachandran and Ho-Jeong Kim for Testa's graduate architecture studio (Computer Assisted Nature CAN, Spring 1998).



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SPEED, IMPACT, CHANGE

An Introduction

William J. Mitchell

The scientists, engineers, inventors, and hackers I know are all absolutely bug-eyed at the current pace of intellectual innovation. You have to be a speedster just to keep up, and you have to make extraordinary efforts if you want to sprint to the front of the pack.

In physics, young scientists and mathematicians are exploring the simple but profound idea that everything might be made up out of strings rather than points. They tell me that the theory seems to cohere, that it does some very beautiful things, and that there's a good chance of it all panning out. There's no way for a layman in these matters to know whether they are right or wrong, but it's impossible to miss the excitement in the air, and it's obvious that they have a radical new style. Their cutting-edge papers are posted instantly on the Web, and are responded to immediately by an eager worldwide community. When the consequences of new mathematical formulations need to be worked out in detail, vast computing power is immediately thrown at the task, and it proceeds at a breakneck rate. If you want to be a serious player in this game, you cannot afford to fall off the pace for a moment.

In biology, there is a comparably massive effort under way to map the human genome as quickly as possible. Here, there is a startling convergence of the life sciences and computer technology, since it's all about understanding the complex information that's locked up in the genome, and about representing that information in scientifically and medically useful, computer-processable form. And the human genome is just the beginning. When that's completely sequenced, biologists will want to move on to other life forms, and there's no end to it. They will demand speedier and speedier technology, so that they can perform sequencing tasks in hours instead of years, and for a few hundred dollars rather than hundreds of millions. And I'm prepared confidently to bet that the information and computer scientists will respond.

Closer to the everyday commercial world, in Silicon Valley, there's a popular saying that Web years are like dog years; they flash by a whole lot faster. If you want your product to win, you have to be prepared to design it, develop the electronics, and pump out the code at that pace. You don't get to IPO, make a zillion dollars, and buy a big house in the hills unless you're first to market.

The engines driving all this are Moore's Law, the Law of Network Externalities, and electronically-mediated global flows of talent and capital. At the intellectual frontiers, the days of leisurely academic reflection and ink-on-paper discourse are gone.

ed is our friend

motto of Cannondale Mountain Bikes
www.cannondale.com

Moore's Law, as all but the most determined technoscoffers now know, tells us that the density of silicon chips—and hence the computational bang for your buck—doubles every year or two. This drove the PC revolution, it has fueled the growth of the Internet and the World Wide Web, and in the future it will allow us to embed inexpensive computing and telecommunications capacity in just about everything. Eventually, we will reach the limits of silicon—but beyond that, there's quantum computing.

The Law of Network Externalities predicts that the value of a network node grows with the addition of further nodes to the network. If you and only one of your friends have email, then it's not of very high value. If all your friends have email, then it's worth a lot more to you. And if pretty much everyone has email, then you can't afford to be without it. Together with dirt-cheap silicon, this has fueled the explosive growth of the Internet and the Web.

Finally, the global mobilization of capital means that investment can be—and increasingly is—focused immediately on emerging hotspots of innovation. And, to mount large-scale attacks on the really important and interesting problems, you need the means to attract the talent and invest in the necessary technological infrastructure. It used to be that established universities and similar institutions could monopolize the means of high-end intellectual production. Now, the venture capitalists are out there chasing the good ideas, academic and industrial organizations are forming new kinds of alliances to work on the toughest problems, and the situation is far more fluid and competitive than in the past.

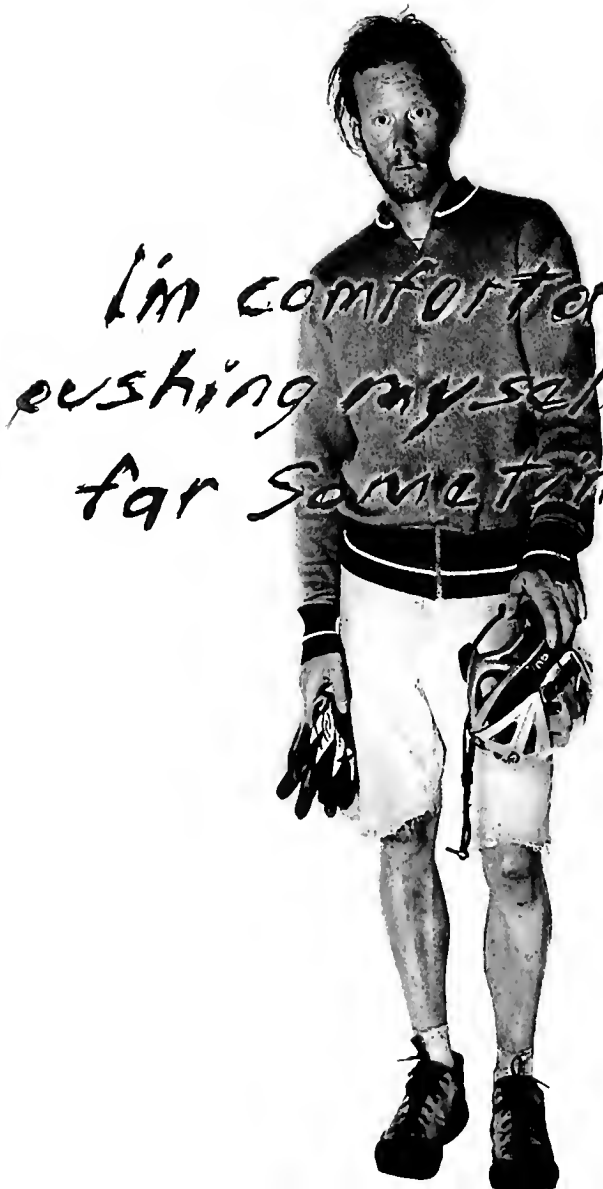
As many of the contributions to this issue of Thresholds directly demonstrate, this new, silicon-powered, network-enabled, high-speed intellectual style is now remaking architectural discourse. I'm not talking about computer-aided design—use of PC-based graphics systems to automate production of working drawings, and that sort of thing. That represented a temporary transitional phase, and one that's pretty much history at this point. The very name gives it away; "computer-aided design" is one of those soon-to-be-dated hybrid constructions like "horseless carriage," "wireless telegraph," and "paperless office" that cultures desperately throw up as they seek to assimilate the new to the known. The trouble, of course, is not only that these metaphors encourage thinking of new socio-technical systems as simple substitutes for their predecessors, it's also that they are intellectually conservative and unadventurous—occluding the less obvious and more important potentials of what's emerging.

One of the truly new conditions is that we can now throw huge amounts of silicon-based processing power at design problems. As a consequence, we can employ increasingly powerful geometric modeling software, simulate performance in every imaginable way, routinely produce extremely sophisticated visualizations and computer-generated physical prototypes, and algorithmically generate design alternatives that would never before have seen the light of day. All this dramatically expands a designer's horizons. It used to be said by harrumphing old-timers that computers were "just tools," that they "weren't creative," and so on—you know the litany; you don't hear much of that now. It is becoming obvious that computer-powered investigation is now as crucial in truly innovative and responsive design as it is in the search for the string theory of everything and in the sequencing of the human genome.

The second crucial new condition is that designers, like other knowledge workers, are becoming Web-reliant. We no longer have to co-locate members of a design, fabrication, and construction team, but can aggregate and electronically interconnect the most capable talent and resources worldwide. We don't have to rely on the office library for our information, but can send out search engines and pull it off the Web. We don't have to produce traditional documentation, but can employ rapid prototyping and CAD/CAM. And increasingly, we are not limited by the design tools and vocabularies that some software designer chose to put into a shrinkwrapped CAD system, since software concepts like Java now allow us to construct ad-hoc working environments on the fly, as we need them for particular purposes, by downloading components that exist out there in Webworld.

The pace is not going to slow down any time soon, and this has vivid implications for design research, scholarship, and education. Design schools that hope to play a leading role cannot take the sort of drearily Popperian wait-and-see position that was once popular, since this privileges critical reaction over induction and invention, and is thus a guarantee of being left in the dust in a time of rapid change. Nor can they retreat too far into the once-glamorous, everything-is-text, it's-all-socially-constructed, critical-theoretic ivory highrise, since this—as Alan Sokal's deadly spoof demonstrated—leads to absurd, cuckoo-land misrepresentations and misunderstandings of science and technology, and creates an intolerable distance from the most interesting action.

The future belongs, instead, to the flexible, fast-learning, techno-savvy adventurers, speculators, inventors, and risk-takers.



john stamstad,
ultra-marathon mountain bike racer

GHOST WARDS

The Flight of Capital from History

Mitchell Schwarzer

1 The cold smell of broken stone trailed my family's drives from Long Island to Brooklyn. Exiting the Interboro Parkway for the surface streets of Brownsville, there was an eerie resemblance between the vast cemetery through which we had just driven and the urban burial ground that we were now negotiating. My parents almost immediately started complaining about the hollow streets and defeated architecture in this remote part of New York City. I'd be reminded that a vacant lot infested with ailanthus trees was once the site of romantic evenings at the cinema, or that the steel-shuttered storefronts on Pitkin Avenue were earlier filled with the latest fashions, or how my father met a long-lost friend from Europe standing in front of a shoe store while my mother shopped inside.

The climax of these drives to visit my relatives on the southern edge of Prospect Park was the rarely-fulfilled suggestion by my father that we first swing by Hopkinson Avenue and look at their old apartment, the first place they lived in America after arriving by boat from Germany in 1950. At this point, my mother would scream "what would be the point," and "why should I (and her children) be subjected to such nonsense and danger?" My father, on cue, would retort that the boarded-up building meant a great deal to him. It spoke about our family's history; he had studied there for the New York State Medical Exam. In those days it was a lively neighborhood where they had many friends.

In the early 1970s, while in high school, I was drawn to Brooklyn and particularly the old neighborhoods. Not coincidentally, many of the people where I grew up in Long Island had also fled from similar places a decade or so earlier. At times, I felt that the solidity of our large, detached, split-level house (built in 1963) was cemented by the vials of wrath cast against the new inhabitants and different tongues of the old neighborhoods, and the abuse hurled at their torn facades. In those days, the word Brooklyn signified failure to Long Islanders, a failure that legitimized their current suburban existence. They had escaped Brooklyn for a better life much as the Dodgers had abandoned Ebbets Field for sunny Southern California. Brooklyn's visible scars were a metonymy for a past my parents (and many of their neighbors) were trying to forget—a slow pedestrian life that took place in spaces of material limitation.

Still, the contrast between Brownsville's or East Flatbush's architecture and that of Long Island made a deep impression on me. In the former were great brick buildings with terra-cotta moldings, stained-glass windows, and wrought-iron railings. There were Gothic schools, Byzantine synagogues, and Romanesque armories. There were parks whose edges were defined by substantial stone walls and serpentine paths that opened onto plazas replete with fountains and statues. Everything looked old, weighty and significant. At the same time, everything seemed to be slowly sinking toward a silent grave.

Brooklyn neighborhoods like Brownsville, Crown Heights, or Williamsburg had been decapitalized since the Great Depression, passed over by banks and markets, passed over by changes in family structure.

South Side, Chicago

These were places blown under by the relentless winds of lifestyle re-fashioning. These were localities that had dropped into the rolling mills of immigrant transition and had been left to decompose amid atmospheres of poverty and abandonment. Although these neighborhoods were developed during the late nineteenth or even early twentieth century, they felt old. Their buildings expressed all stages of the aging process, from reconstructive alterations to structural afflictions, from hasty surgical removals to ill-fitted protective prostheses.

On Long Island the built landscape was sparkling new and clean, running like a pure thread of progress. The large houses advertised powers of material acquisition and storage as much as the wide streets and prominent driveways promised a life of fast, easy, and individualized movement. Houses had ample yards on all sides. Building materials were thin and temporary. Over the years, people constantly added onto and modernized their properties. But, whereas alterations were devouring Brooklyn, they made sense on Long Island. Money was flowing, ambitions were wet, and the appearance of the place resembled the shifting styles of the hairdo of those years.

Growing up in an instant subdivision, the physical past was at a far remove, obscured by the horizontal height of the suburban colossus. Practically every building within a mile of my childhood house in Manhasset Hills was constructed after the Second World War; most were built in my lifetime. My parents (and even I) were older than these buildings. As a result, the past of words and the present of buildings collided. Inside my home, life consisted of reiterations and stories of the past, tales of lost relatives, lost languages, and lost countries. Outside, waves of the here and now crashed against these antiquities. I grew up riding my bicycle in an analgesic landscape of impeccable lawns and withering memories. The marketplace, through its powers of construction on a vast scale, had fast-forwarded time and created the illusion of a perpetual present.

When my family intentionally travelled to a built past, it was generally to neighborhoods wrapped up in Edwardian bows and brownstone bonnets. These journeys were towards a past that had scant personal connection to us. Sure, we loved taking walks around Greenwich Village in the city or the village of old Roslyn on Long Island. These were old, evocative, and pleasant places. They weren't, however, as intriguing to me as the decayed Lower East Side or the vast reaches of Brooklyn and the Bronx. Much of Greenwich Village and old Roslyn were part of historic districts, places whose aging process had been arrested and where reconstructive surgery had worked. Similar to the education I received in public school, geared exclusively toward England and a protestant America in which none of my relatives had participated, these places were remote to me. They evoked a history that had no tangible bearing on my life, my family's past, or, for that matter, the lives of almost all the first- and second-generation Jewish, Italian, and Chinese people around whom I grew up.

Suburban house

2 In order to speculate on the relationship between history, aging, and the built landscape, I need to further distinguish the three types of landscapes I have alluded to so far: 1) marketplace zones where capital investment is active and new construction and alteration commonplace, 2) historic districts where the unpredictable and destructive forces of the marketplace are regulated, and 3) ghost wards where the actions of the marketplace are greatly diminished, and where decay is commonplace. My hope in describing ghost wards (or decapitalized zones) is to appreciate the slower and thicker version of history operating there within the American landscape.

There is a significant difference between the notion of history within historic districts and ghost wards; between highly-regulated sectors that immobilize a moment in the past and unregulated locales where the past flows as a murky river. The concept of the historic districts derives from an opposition to the marketplace city. Preservationists long ago realized that industrial capitalism was a force of such power that it threatened the entirety of existing architecture. A fascination with mobility, newness, and pragmatic business threatened the presence of the past within our cities. Any building or neighborhood could be altered or demolished. The history of American cities over the past 100 years is full of stories of architectural masterpieces falling to the wrecking ball and entire neighborhoods bulldozed for new uses. Unlike Europe, where there is much greater respect for place and the past, America has had little patience for reflecting on time's passage as an objective in and of itself.

Given such attitudes toward the past in the New World, it is not surprising that the ideology of historic districts has leaned toward a European model of stability and permanence. Looking east over the Atlantic, historic preservationists have combatted speed and change. Districts have been governed by tight regulations on old-building alteration and new-building construction which seek to channel capital movements in prescribed, predictable, and harmonious ways. Statutes are essentializing, seeking to exclude as much of the present as possible in order to preserve the past as it was. Historic districts are hostile toward the contemporary and toward technological change.

In historic districts, time is sliced off at the bottom to reveal the age of original construction and its long-vanished inhabitants. Even when industrial facilities — a woolens mill — or an ethnic neighborhood — old-law tenements — are preserved, the representation of history is flat. Two dimensions are stressed: the far-off past and the moment at hand. Cast off, filled in with caged materials, are the varnish and fingerprints of temporal change.

Because of these attitudes and an opposition to newness, speed, and change — to conditions that embody the attributes of the marketplace city — the historic preservation movement has customarily confronted popular American values and collided with the impatient and commercial ways that history operates within American cities, as opposed to European ones. The movement has, likewise combatted the shadier operations of history within American built landscape,

In ghost wards history ranges beyond moments of original construction or contemporary use;

here a history emerges of the long time-span of change and the disorderly conduct of individual perception.

the abandoned dreams that corrode our physical environment.

This latter comment leads us into the concept of ghost wards — built terrains of abandonment, decay, and obsolescence that are integral aspects of American history. Ghost wards are difficult places where dreams have often been replaced by nightmares and where danger and violence are more commonplace than elsewhere. Their neglected appearance disturbs the moral sense, inasmuch as their inhabitants are often the elderly, the poor, and the displaced. Their buildings may be completely abandoned by people. But, more commonly, ghost wards are inhabited at slower speed, at reduced density, and at increased remove from the fast pace of contemporary business and cultural change. In places like Gary, Indiana, or Detroit, Michigan, whole cities seem to have fallen out of step, voided into stage sets for dystopic films.

Nonetheless, in decay there is meaning. Even the cruelest and most neglected landscapes can inspire. For me, the weather-worn darkness of Brooklyn opened numerous doorways into the past. The monumental passage along Eastern Parkway toward the triumphal arch at the Grand Army Plaza inspired me with a sense of thicker time, connecting back to Imperial Rome, to my father's frequent Latin quotes, and to his stories of provincial yearnings in Galicia for life in a great city like Vienna. Later wanderings among the more shattered landscapes of Brooklyn brought up for me images of wartime Europe, the cities of Poland and Germany bombed into the ground, the ruin of civilization and the destruction of my family coexisting alongside New York City's decline during the early 1970s.

For others, ghost wards take on different meanings. For their longtime inhabitants, they can be places of resistance to the uncontrollable movements of capital, surfaces on which to vent anger and represent unrepresented values.[1] For new immigrants, they can stand for the dream of America, the first rung in a ladder leading toward plenty. And for others still, ghost wards can be places of reverse migration, colonies for artists and young people, an inspiration of building decay for counter- and underground persons preoccupied with their culture's decay. The movements of racial, ethnic and cultural groups and the conquests of land and property are all visible in ghost wards. Here buildings and neighborhoods display the social migrations and darkened shadows that propel American culture.

Ghost wards are uniquely American. Our nation's myths of individuality and opportunity have long been accompanied by brutal attitudes toward architecture and history. America's wealth, the size of its internal economy, the fierce degree of business competition, and the seemingly limitless extent of land and resources have created conditions for extraordinary social mobility and material waste. These factors have brought about a state of continual disruption and dislocation for our country's buildings and cities, a national phenomenon of ongoing demolition and ruination amid constant new creation. Nowhere in the world are buildings and neighborhoods vacated and discarded on such a scale, at least not in peacetime. While the history of the

Smokestack of former J.R. Evans Leather Co., North Camden

world has certainly seen untold numbers of civilizations rise and fall and cities abandoned for all time, only in the United States has a society incorporated the large-scale divestment of architecture and urban form as everyday practice. Alongside America's enactment of Rome's ancient glory stand symbols of Troy and Carthage, power and profits brought forth by images of destruction.

These settlement practices leave in their wake hemorrhaging landscapes—the ghost wards I am discussing. We see such places scattered throughout the country, in the isolated mining towns of the West deserted after their strikes were exhausted, alongside the old cotton fields of the South depopulated after agricultural mechanization, or in the mill cities of the North, their once-proud energy directed like lightning into the inert ground. We see such places wherever progress turns upside-down, economies depress, images deform, and people and businesses move. Especially after the post-war suburban boom, larger-than-ever sections of our cities, rural areas and suburbs have been forsaken by capital markets. The viscous fringe of the present, the competitors falling out of the race to the future and into the broad plains of historical inertia are contained in these areas—which include inner-city slums, outmoded industrial districts and transportation corridors, by-passed towns and main streets, surplus dairy farms, and (increasingly) automobile commercial districts, like shopping malls, driven out of business by new, larger competition.

In ghost wards history ranges beyond moments of original construction or contemporary use; here a history emerges of the long time-span of change and the disorderly conduct of individual perception. It is a fatigued history of material decay, economic obsolescence, and social transition, a history that abandons bi-polar notions of present and past for a formless notion of historical ebb and flow. Instead of buildings taking part in a dialectic of wholeness, deficiency, and then restoration—the dynamic of the historic district—these buildings possess unpredictable lives and pointless motivations.

Today, beyond the modern-postmodern caesura, it is time to rethink the rot and the bleached veneers that slow the lives of de-capitalized buildings. It is time to re-evaluate the callousness that is part and parcel of industrial capitalism and its ethos of speed. History, for many Americans, is not what is preserved, but what is left behind.

3 Ghost wards, torpid remains of a market-oriented culture of speed, half-digested leftovers from a culture of plenty, explain aspects of the mobile chaos of the marketplace city. Fragments of buildings, infrastructure, and human lives, they are evidence of relentlessly and ruthlessly changing attitudes toward building materials, density, height, and movement patterns. One winter day in 1980, I wandered for hours along the valley of the Merrimac River in the old mill city of Haverhill, Massachusetts. I walked on the main street past four- and five-story remains of factories, lost in the forest of verticality that once defined American settlement patterns. I walked into old residential neighborhoods,

Franklin Amory, NY National Guard (now a shelter for single men)
South Bronx, New York City

past resplendent churches and sagging wooden triple- and double-deckers, where strips of plastic, aluminum, and asbestos thronged clapboard. All through the city decaying pieces of industrial culture twisted uncomfortably in their fresh graves. Alone, accompanied only by stabbing winds, these fragments brought to mind the fragility of America's architectural dreams: in this case, of creating a great river city of immense brick walls and church towers. Only a few miles from the frenzy of the Route 128 computer belt, Haverhill had become a bog of weathered dreams.

My wanderings through Haverhill were not all that different from J.B. Jackson's tale "The Stranger's Path." In an unnamed city, Jackson wove a journey into the transient zones that were once ubiquitous outside rail or bus stations in all-American cities. As a tour for new visitors, Jackson's itinerary was composed of old men and decaying buildings, of second-hand stores and bypassed lives. As he wrote:

> So the beginning of the Path is marked by the abandoned means of transportation and the area near the railroad tracks. We are welcomed to the city by a smiling landscape of parking lots, warehouses, pot-holed and weedgrown streets where isolated filling stations and quick lunch counters are scattered among cinders like survivals of a bombing raid.[2]

Further in, this path was no less tawdry, always down at the heel, dirty, and raffish. By no accident, Jackson's path was for the unattached visitor, those who had fallen out of step with change. The unattached city, the ghost ward, has, in other words, its mirror in social life. As buildings are detached from the economic life of the city, they serve the similarly detached lives of people. Ghost wards are the physical double of social disintegration. They are the brick and wooden, the arched and trabeated consequences of a national ethos of social impoverishment.

Rather than seeing the decapitalized building or neighborhood as the avoidable by-product of contemporary development, they are better understood as the dark night of progress and development. Their creeping vacant visages are America's leftover urbanism. Their decomposing corpses are the aftermaths of an endless fascination with youth. The re-bar exposed on crumbling bridges and the shards of glass no longer protecting store windows are hangovers from America's burning orgy of the past.

In a critical sense, the broken dreams of ghost wards discolor the nation's optimistic and naive gaze on the future with the ballast of earlier wild-eyed visions that also promised utopia. Unlike historic districts, whose isolation through building regulations insulates them from market forces, from cycles of movement and abandonment, ghost wards are witness to the shifting directions and intensities of those forces. The past roars powerfully here. Fragments of unrealized dreams, insensitive present actions, and future disappointments abound. Ghost wards are the diminished double of our ever-mobile dreams, history's revenge on the future.

Yet, while antagonistic to our country's preoccupation with objective and eternal youth, ghost wards are also a route towards a subjective and highly-personal youth. They lead us

"The oldest bank in Michigan" transformed into a Domino's Pizza
East Side, Chicago

toward the fires that burned earlier in life and were extinguished through the accretions of responsibility and maturity. The decapitalized city is redolent with openings onto abandoned landscapes of the mind that countermand the order of the physical world and the logic of social life. For here, in the parts of cities and towns where purposive activity has yielded to indolence, straight and narrow journeys curve, and precise itineraries meander. The diversions of youth, the structuring of life from random and personal encounters, may be experienced anew. These are zones for enactments of something like Guy Debord's derive — moon-like passages through obscure and unpredictable terrains.

It is the second-hand qualities of ghost wards that allow them to function this way. Their products have already been bought and sold, their uses have vanished or been demoted, their history is heavy with departure. Although much has happened in these places, commerce and present-day concerns rarely direct attention away from the objects themselves and the departed past to which the subject also yearns. This absence of competing messages allows buildings and other artifacts to reveal the past in multiple and highly personal ways. The silence common to ghost wards, their lack of new parts and shiny signs, makes their buildings and streets as thin as the backlots of Hollywood. Their cracked walls are openings for the eyes, their peeling paint are invitations for the smell, their creaking floorboards are corridors for the ears to other worlds, to places where perception is sluggish and tangled with the imagination and memory. As the sculptor Tony Smith writes of a journey in such lands: "Later I discovered some abandoned airstrips...Surrealist landscapes, something that had nothing to do with any function, created worlds without tradition. Artificial landscapes without cultural precedent began to dawn on me."[3]

By contrast, in historic districts, gussied-up buildings and carefully-prepared educational programs crowd out fantastical musings and personal reactions. Up-to-date signs advertise any number of programmatic intentions. Stores and restaurants invite consumption, tee-shirts on which to wear the sign of the past. A density of messages crowds out the imagination. While less frenetic sometimes than the marketplace city, historic districts continue the relentless rationalities of day-to-day life.

In ghost wards, the typical lack of any reason to be there is an invitation in and of itself for other experiences. At times, there is nothing to concentrate on other than the movements of the senses on objects. Alexander Wilson's description of Cades Cove within the Great Smoky Mountains National Park illustrates these points. As he told us:

> There are no attendants playing historical roles, no paving, no marigolds, curtains, or furniture. Just the buildings themselves, empty, with weeds growing up to their front doors...By leaving only the buildings on their rough patches of land, Cades Cove takes our attention away from things - which easily transform themselves into commodities - and focusses it on the physical traces of human culture on the land [4]

In an aesthetic sense, ghost wards display the reverberations of sense that flower when use and need fade away.

The instability of ghost wards as regards to function derails time into a slow spatiality. Buildings and districts become the equivalent of non-places, dropped from history's rational march and the subject's whole life into a bottled-up temporality composed of sediments of sensual meaning. Robert Smithson wrote a great deal of such landscapes, in the industrial corridors of Passaic, New Jersey, or on the shores of the Great Salt Lake in Utah. In describing how he came upon the site for the Spiral Jetty (1970) on the lake, Smithson described:

> Two dilapidated shacks looked over a tired group of oil rigs. A series of seeps of heavy black oil more like asphalt occur just south of Rozel Point. For forty or more years people have tried to get oil out of this natural tar pool. Pumps coated with black stickiness rusted in the corrosive salt air. A hut mounted on pilings could have been the habitation of the missing link. A great pleasure arose from seeing all those incoherent structures. This site gave evidence of a succession of man-made systems mired in abandoned hopes.[5]

In this passage, as in other writings, Smithson was captivated by disruptions of matter in time, agitations of the earth's surface, exposures that reveal sedimentation of both pre-historic geologies and historic technologies. In such disruptions of temporality, perception falls out of everyday step and descends into what becomes for him a void. Art, for Smithson, is such a slowing down, a detour into inertia between events.[6]

Such perception is difficult within historic districts. Created there is the illusion of rebirth from decay, of the eradication of time's markings to create a dialectical synthesis of past and present. But in ghost wards no such synthesis occurs. An infinity of moments are in play. Decay is not arrested. Instead, it saddles buildings with strange beauties of decomposition, layering, and material subsidence. As buildings sink away from use, their materials come alive in ways that pragmatic culture considers disrespectful. Oxidation and corrosion imperil the power and sheen of metal, erosion and cracking take apart the solidity and weightiness of stone. Wood is revealed naked and dry, or hydrated and soft, its colors working toward brittle gray or bone white.

In all these ways, built materials change into something unintended by architecture, an anti-architecture inasmuch as their materiality lacks the commanding presence of the human hand. Ghost wards tell us what architecture's limit is and confuse the building practices of rich and technological America with the wind-blown sands that cover fallen civilizations.

The sense of time in ghost wards is much less one of the historical chronology than of geological and biological entanglements. To bring up an earlier idea, ghost wards are the other sides to the coin of the capitalizing city. Ghost wards are what Smithson calls "ruins in reverse," those signs advertising "...all the new construction that would eventually be built. This is the

Ghost wards tell us that the world is not composed of perfect and imperfect things, of past and present realities. Rather, the world is a dream of perfection dissolving at all times within imperfection.

opposite of the romantic ruin because the buildings don't fall down into ruin after they are built but rather rise into ruin before they are built."[7]

Ghost wards tell us that the world is not composed of perfect and imperfect things, of past and present realities. Rather, the world is a dream of perfection dissolving at all times within imperfection. Ghost wards are the abandoned sets of the past that support the abandoned dreams of the future, the disrobing of the dream of progress at the very moment it is unveiled elsewhere. They are the nagging inertia within America's everlasting set of movements between farm and city, city and suburb, and, more recently, suburb and small town.

4 It would make no sense to regulate or institutionalize ghost wards. Obviously, such practices, besides being futile, would turn them into equivalents of historic districts. Ghost wards are uncontrollable. Parallel to the actions of their constituent parts, they are constantly disappearing as they are remade into the marketplace city or historic districts. At the same time, they are continually emerging in new and unexpected places. A mobile panorama, ghost wards are slow in and of themselves, yet animated by their encounters with other places. And unlike ruins, they cannot be reclaimed from decay or rescued from oblivion. Ruins belong exclusively to the past. Ghost wards are witness to a miscellany of temporalities.

History is about loss, about time's inevitable passage. History is about mortality. As George Bataille wrote: "It is not only the composition of elements that constitutes the incandescence of being, but its decomposition in its mortal form."[8]

Such messages are critically important to any widening of the historic preservation movement. Until now, preservationists have denied these aspects of history. They have combatted the effects of time's passage, rescuing and restoring threatened edifices. There is a divine quality to these acts. The very assembly of the words history and preservation into a single concept speaks to a divination of time and a nullification of death. Through preservation, ruins have been excavated, buildings have been restored, and the past brought back to life as a partner of the present. Preservation is an integral component of secular Western consciousness, a post-theistic struggle against the loss of God and the afterlife. It is a state of mind that seeks to block death through fortifications of past buildings.

In the United States, however, preservation has met one of its greatest challenges. In the New World, a society has emerged that views loss in conjunction with gain, and material obsolescence with progress. Death and decay have become the odd partners to eternal youth. Paraphrasing the writer Vladimir Nabokov, Americans seem to believe that the future is but the obsolete in reverse. They fear, to a degree much less than Europeans, the scarcity of meaning in a present moment absent divine guidance. Meaning, for Americans, may come from distant pasts as well as from preservation efforts. But, most often, meaning emerges in a dialectic

with an eternal present, a set of pasts catapulting toward the moment at hand. Meaning is where capital flows, where practices of making and selling images continually excavate, erode, and discard matter.

I have raised the phenomena of ghost wards as a destabilizing fragment of these popular American values. I have written of how ghost wards disclose the unpredictable, personal, and sluggish temporalities that operate within the American landscape despite the power of rationalizing forces. Ghost wards are the shifting sands blinded by capital movements, where here and there the spring blossoms are otherworldly.

1 Camilo Jose Vergara, The New American Ghetto (New Brunswick: Rutgers University Press, 1995), 2.

2 J.B.Jackson, "The Stranger's Path" [1957] in Landscapes: Selected Writings, ed. Ervin H. Zube (Amherst: University of Massachusetts, 1970), 95.

3 Samuel Wagstaff Jr., "Talking with Tony Smith," in Gregory Battcock, ed., Minimal Art: A Critical Anthology (New York: E.P. Dutton, 1966), 381-386.

4 Alexander Wilson, The Culture of Nature: North American Landscapes from Disney to the Exxon Valdez (Cambridge, MA: Blackwell, 1992), 212.

5 Robert Smithson, "The Spiral Jetty" (1972), in Robert Smithson: The Collected Writings, ed. Jack Flam (Berkeley: University of California Press, 1996), 146.

6 Smithson, "Quasi-Infinites and the Waning of Space" (1966), 34.

7 Smithson, 72.

8 Georges Bataille, Visions of Excess: Selected Writings, 1927-1939, trans. Allan Stoekl (Minneapolis: University of Minnesota, 1985), 177.

THE URBAN EXPLORATORY CIRCUS

Infrastructure for Corporeality, Connectedness, and Virtuosity

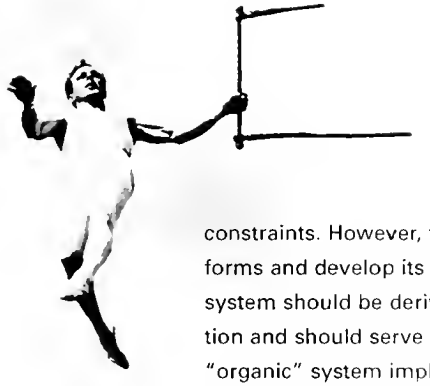
Master's thesis

Rob Clocker

It is a common observation that the "profession" of architecture is in a state of crisis. Architects who wish to influence society struggle in an increasingly media-oriented culture to find expression within the limited language of building. Central to the perceived threat are not media technologies themselves but the notion of speed which these technologies evoke, an intangible and persistent movement which opposes the static nature of architecture. Through their speed and mutability media technologies facilitate progressive thought; architecture, meanwhile, is co-opted by conservative power structures in society and creates predominantly slow, permanent structures. Even in its focus on "profession" rather than "practice," architecture has fallen into a conservative position, declining to acknowledge crisis and adopt change. By focusing on permanent structures, architecture ignores temporality and mobility; by limiting itself to building structure and enclosure, architecture loses the expansive and integrating vision of total design. Viewing projects as singular object buildings, architecture forgets a systemic approach to the larger scale. Traditional typologies are no longer a viable framework for architectural design; complex programs change much faster than traditional architecture. 'Form follows function' is reductive and broadly assumes a predictability of function. Architecture is seldom, if ever, used only for its intended purpose.

Hence, architecture needs a new, strategic approach to form and program, one less prescriptive and more suggestive in which an organic system of constraints determines where and how building occurs. An individual designer's skill is one of these overlapping

The UEC integrates media technology as performance rather than a spectacle in itself. The aerialists swing between two walls of scrim which can receive projections of choreographed imagery, simultaneous performances elsewhere, or imagery that interactively adapts to the performer. The audience experiences both the live performance and its virtual counterpart as a single meaning in reality



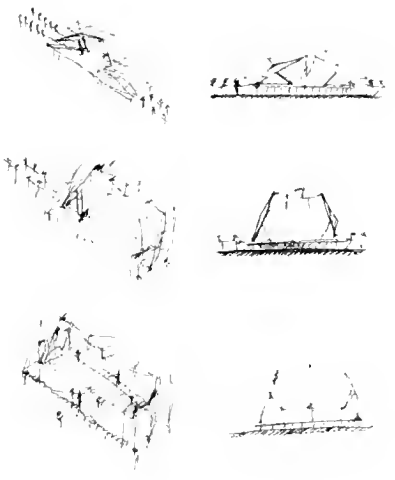
constraints. However, the system should predominate over individual forms and develop its own language for communicating use. The system should be derived from culture, context and individual inspiration and should serve as a guideline for decision-making. An "organic" system implies growth, change, and iteration and lets architecture reflect the speed of life.

Proposal: The Urban Exploratory Circus

Starting with the circus model as a traditional model for the provisional, this project makes a proposition to the profession. The design is an organic system that allows for adaptations through the alteration of its users. The project considers the design of an autonomous infrastructure as well as that of specific architectural elements. It organizes these elements at different scales (body, building, site, region) and through different qualities (graphic, aural, visual, tactile, temporal). The flexibility of the system allows its users to reinterpret the system to address changing uses.

Infrastructure and Event

The project is a travelling circus school that includes training and performance facilities for both amateurs and professionals. Offering training, the circus lets amateurs explore the territory of professionals. It is a place of transformation where people can learn and master techniques and technologies for their own sake. Because the wonder of the circus lies in virtuousity and not proprietary knowledge, it is ideal for individual exploration. The program here begins with discrete elements for both performers (arialists, gymnasts, clowns, etc.) and technical support (music, lighting, video, etc.). These elements are connected via a service infrastructure and a communications network. The challenge of the program is to allow for adaptive use and to understand space as strategic instead of functional. The physical and logistical connections between elements generate the form of the architecture. This system of connections allows users to change the relationships between elements or to design new ones.



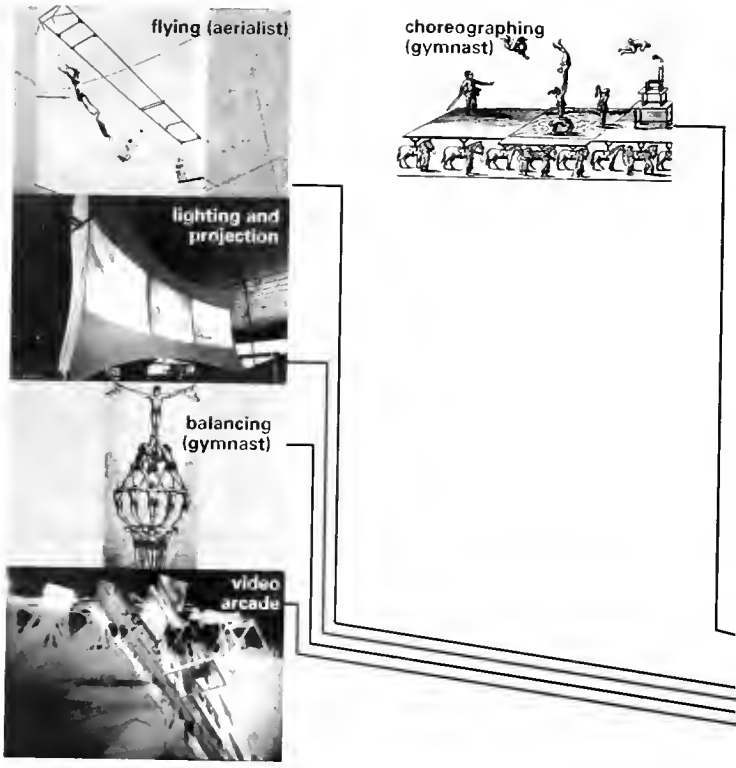
These sketches illustrate the stages for setting up the trapeze structure. Local people are welcome to help set up the buildings and services as well as use the facilities and receive training in circus and technical arts. Professionals will also use the setups to create and perform works, either live or through virtual media projection

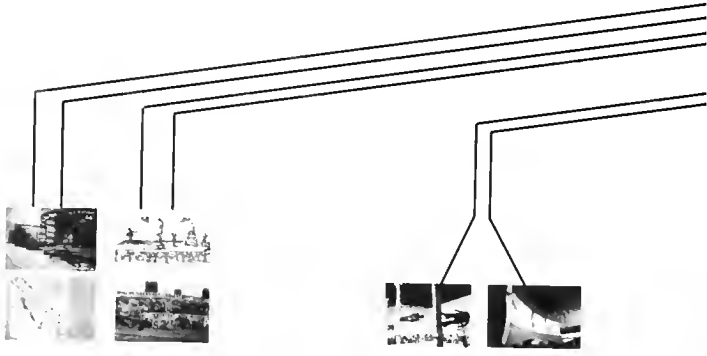
Performance:
Participation, Virtuosity, Velocity

The movement and interaction of program elements is key in making architectural decisions. The major performance pieces can travel separately or together, sharing both local and regional communications infrastructure. Very large groups take on special properties where pieces are combined to form larger figures. Modular components are combined to create a network of performance spaces, while specialized forms provide technical connections between them.

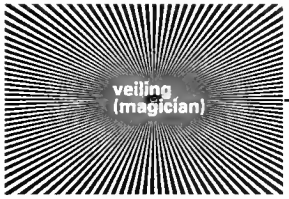
The guiding limitation of this system is that the components must be assembled solely by human labor. Participants take part in all aspects of the process; setup, learning, performance, and tear-down. By demanding mobility, participation, and understanding, the architecture adapts at the same pace as culture. That these opportunities are measured in concrete skills only increases the speed of change. Speed is at the pace of ideas rather than of rapid reproduction, and these ideas have immediate meaning in the lives of those who help to develop them. The circus moves through cooperation and complex lateral interaction instead of by centralized control. Through this, the circus achieves a speed and beauty in performance as limitless as imagination.

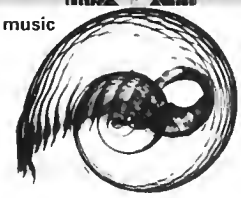
Rather than proposing forms that culture can misappropriate, provisional architecture proposes interrogative environments that respond to the pressures of use. Provisionality here implies a system of precisely designed objects with a generic infrastructure that orchestrates their relationships. Architects must develop skills in designing flexible infrastructure at all scales - bodily, architectural, and urban. Such design must emphasize participation, connectivity and accountability. Through these will come the inspired creation of beautiful environments.

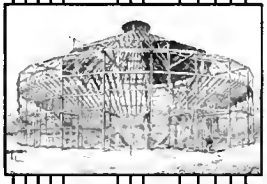




This map demonstrates a possible logistical organization for the circus. Time progresses as six groups travel and perform, meeting at times or trading individual units. All groups converge for a large performance, after which they separate into different groups and continue to tour. Such a logistical view of how the architecture lives is crucial to the initial design process.







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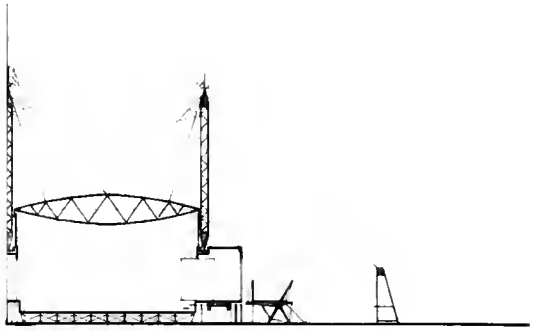
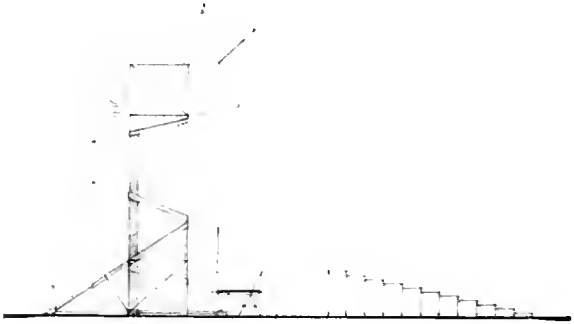
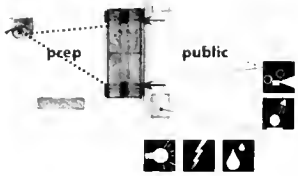




performance

flying (aerialist)

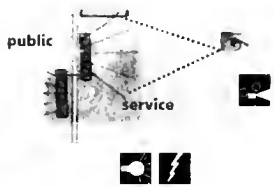
The flying trapeze operates as training, opens for performance, and integrates with projection. Two transformer trucks couple to form the rigging, the trusses unfolding and raising quickly under manual power. Ideal installation includes association to at least one projection tower and sting for high visibility.



technical

lighting and projection

Includes indoor and outdoor lighting setups and large screen building projection unit including sound, also digital design possibility.



standard commercial container

standard flatbed trailer

custom designed transformer truck

small trailer, truck, or other vehicle

materials carried with other components inside container

lighting

electricity

projection

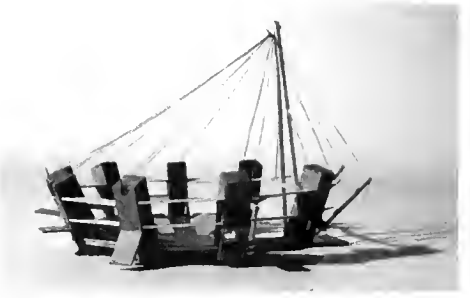
water

toilets and changing

allow for view

number of persons required to travel with and operate circus

number of persons to assist locally with setup



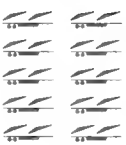
infrastructure

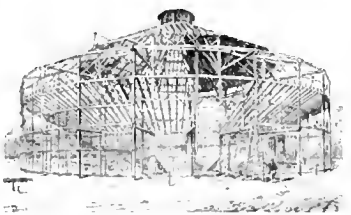
seating and projection

The separated units of the circus arena. As fragments these become outdoor projection towers and mobile bleacher seating for creation of performances

extensions

x 10





circus arena

Up to 10 transformer trucks connected to create an enclosed arena with convertible roof to host performances and double as outdoor amphitheater and park. Individual trucks require definition for autonomous use

COMPUTERS IN ARCHITECTURE

tools to think with in the process of design

Megan Yakeley

Computers have been a part of the architectural profession for almost half a century yet it is only in the last decade that they have become commonplace. Now, they exist in virtually every office and every school of architecture across the country. Early uses of the computer concentrated almost exclusively on the quantitative, formulaic side of architecture and largely ignored the creative process. As a result, there is a perceptible resistance to using computers in the design studio. Few designers believe the computer can help them to design. So how can the computer be used to stimulate design thinking and the creative process? In Mitchel Resnick's Turtles, Termites and Traffic Jams[1], the chapter Simulation and Stimulation emphasizes the difference between how the computer is used in many areas today – simulation – and how it could be used instead to stimulate and develop the user's thinking. This is no less true in architectural practice; we use the computer only to simulate and represent previously created designs. In education, many still view the computer as merely a mechanism for presentation.

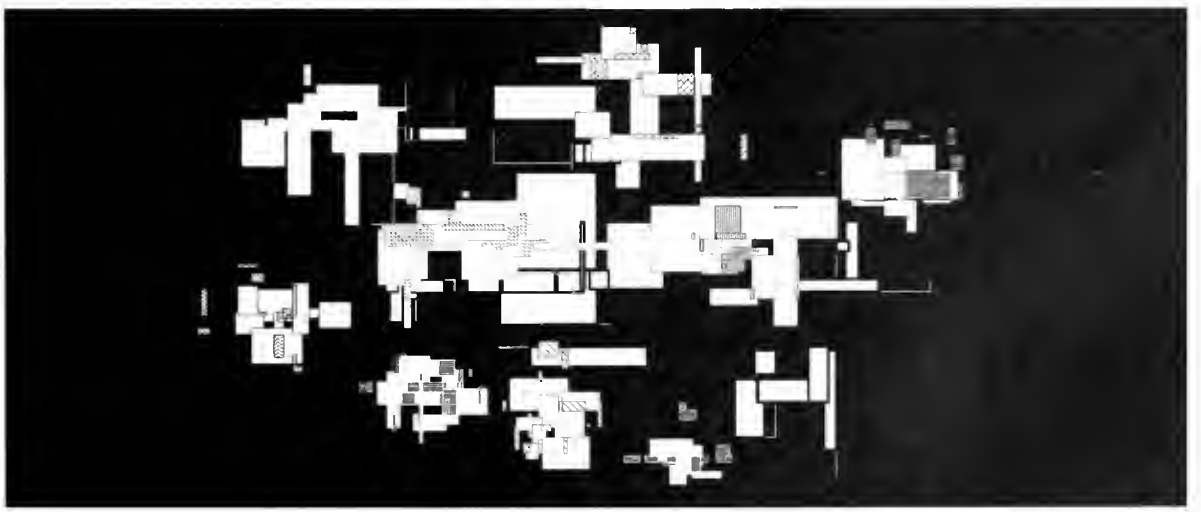
This paper describes a process that involves computers in a new way in design thinking.[2] The computer is on the one hand entirely necessary, since the program and therefore the process cannot run without it, but, on the other hand, the computer is entirely incidental. The purpose is not to teach the students how to use a computer, but to stimulate their imaginations when thinking about, and understanding the process of, architectural design. In this context the computer is merely the vehicle by which the students can learn and develop their own creativity. In its purest form, the output of the computer—what it draws on screen during the process—is irrelevant. It is the actual moment of communication, the point at which the designer expresses her ideas to the computer during the process, that is most relevant. The outcome is simply used to confirm the original intent and to form the basis of further thought.

This concept, of using a computer as part of a process of thinking about design, is being taught in my graduate level class at MIT. Students in the class use the computer as a vehicle for the exploration of a topic in architecture of their choosing. Whilst in the process of deciding, the students are introduced to MiniCad, a program that, although widely used in practice, is not often part of a school of architecture's repertoire. This program is used for its internal scripting language, MiniPascal, which is easy to learn and can be used both to demonstrate the principles of computer programming, and more importantly, to model abstract thoughts and ideas. The software offers instant graphical output as a result of writing procedural code, but learning to program a computer is a side effect of the class. It is the use of this relatively simple language to instruct a computer about a particular thought, and making that design thought concrete and external, that is important. The class concentrates on the development of general learning about the process of design rather than specific knowledge about how to program a computer. It uses the subject the student has chosen together with the computer as a combined vehicle to do so. Through the conversation the student has with the computer, and the consequent very explicit

decisions she must make, she delves deeper into her chosen subject area and simultaneously becomes aware of a method of working that can itself form the basis of a conversation about the design process.

In a class where learning to write software is the primary focus, the final outcome usually involves a process of writing separate sections of code that can be assembled into a working product. Often in such classes, the subject matter of the software is secondary to the production. Usually students begin by researching the subject area, but from that point on it is the creation of the code that is the focus of their attention. In this class, however, the students are involved in making a program that represents their thoughts about the subject matter they are involved with. The structure of each of their working processes differs, but the common theme is a process that can seem haphazard in computer programming terms. They are not involved in creating software; at any given stage they are expressing their ideas in a particular language that results in something appearing on the screen for them to think about. Each step in the process is a small modification to an ongoing working program. If a change does not work, or if it produces results that are at odds with the original intentions, then it can be undone and an alternative can be written. This is a process similar to early sketch designing on paper; it is a conversation with the materials at hand.[3] With each design step, the architect modifies her original thinking in the light of the new way in which she views the sketches she has made. In this class, the student assesses what appears on the screen and uses that assessment to decide what modifications to make to the procedure. At each stage there is a fully working program. The students are programming computers, but they are thinking like architects and designers while they do so.[4]

Writing a computer program that will perform some specific function is taught as a linear, logical process that has an inevitable conclusion and a predefined outcome – the working program. Using a computer to express and modify design ideas is as non-linear as the design process itself, and the final outcome is only recognized when it is reached. Relational, non-linear thinking is positively advantageous here, as nothing disastrous occurs if the rule or algorithm is not quite right. In fact, it can actually be an advantage, as that is when surprises occur, causing the student to think "well, I didn't mean to do that, but actually the results are quite interesting and might just work to solve this design problem." A similar process occurs when a student has been working on the same design on paper for quite some time, and the professor suddenly turns the paper around to look at it from a different angle. New shapes appear, the design is



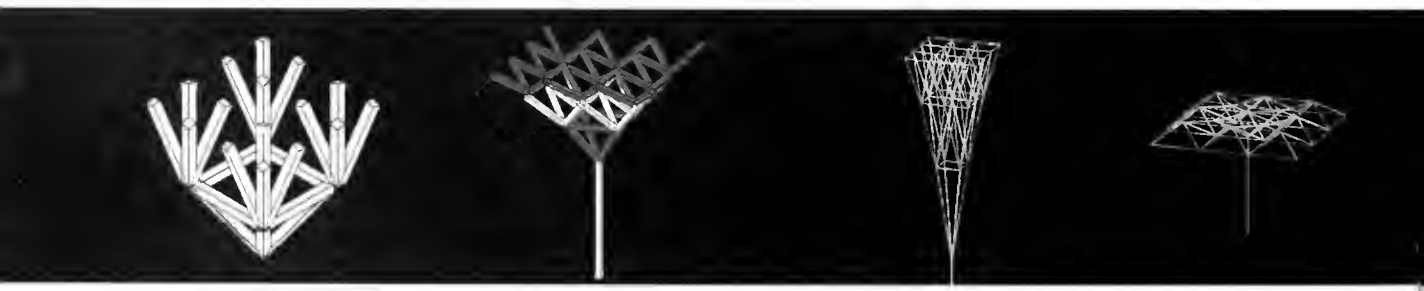
viewed in a different way, and answers sometimes appear to be more obvious.

The students currently enrolled in my class this semester are formulating their initial ideas for projects and beginning to learn the syntax of the language. Since learning to program is not the aim of the class, there is extensive support from me, and from each other, to find ways in which to make the computer "do something useful" for them. It is not an easy task, yet one by one they are taking control of the computer and of the situation. Each of them has overcome the first significant hurdle of writing a successful procedure that creates a graphical output on the screen. Ususally, the results are entirely different from traditional sketching; but in this class results cannot be judged by product alone. At this early stage, the students' verbalized thoughts and ideas are beyond their computation skills, yet they are already talking about process versus product, how the computer can help them, where their design ideas are heading and so on. The need to be both explicit and highly precise about every separate design move can be a hindrance in other settings; for this reason the computer does not easily perform as a sketch design tool in the conventional sense but the purpose of sketching does not lie in its aesthetic quality and appearance. Early sketching occurs to formulate and discover both the design question and potential solutions to that question. In class, the students are sketching in computer terms. They are attempting to formulate the design question through their scripting, and the computer's response to them forms a world of potential answers to explore. Examination of those answers can lead back to the reformulation of the design question.

Two students from last year, who continued their work in the subsequent semester, give a glimpse of the quality of results possible. Derek Fisher and Albert Presti were in the penultimate semester of the Master of Architecture program, and both completed their thesis projects the following semester. In both cases, the work they completed for this class had a marked effect on their chosen thesis topics.

At the start of the semester, Derek was working on another project that was exploring Tatlin's tower and suggested this might be a suitable subject of investigation. Albert wanted to combine the class with his current studio project. He mentioned that the site was on a heavily wooded slope, and he wanted to explore the nature of the feeling he had when visiting the site and sketching the trees.

Derek's first designs centred around attempting to model Tatlin's tower on the computer, but he was encouraged to separate his investigation of the tower from creating an actual representation of it. He began to focus on the spiral forms within the tower and, during the course of the semester, developed an algorithm for the representation of three dimensional spirals in general. By doing so, he not only had to learn about the mathematics of spiral representation, but, more importantly, he had to



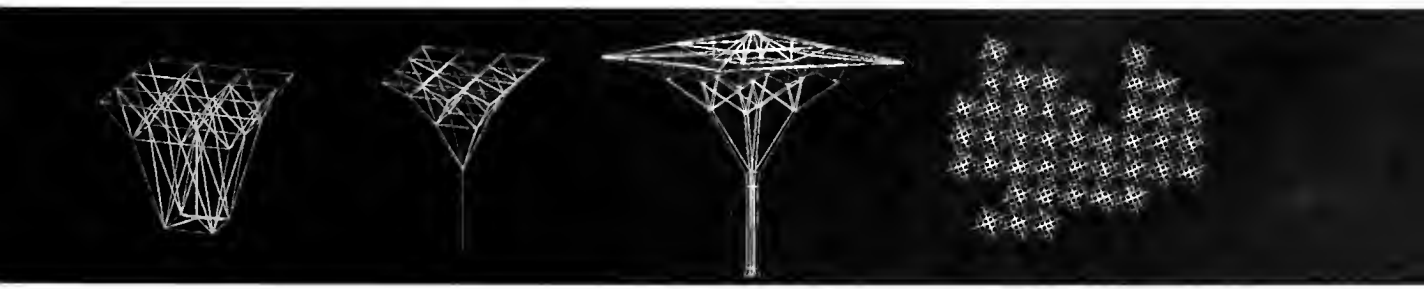
examine the tower itself in much greater detail. He discovered that there is no single 'Tatlin's Tower' as such, since there are many different versions and many different designs that Tatlin explored. All of them differ somewhat in the nature and mathematics of the spirals involved and how they interacted. Through using his algorithm, Derek generated not only the spirals in the model most often associated with Tatlin's tower, he also generated some of the other designs Tatlin worked on. He even suggested some forms he thought Tatlin might have explored if the designer had had access to the same technology.

Albert's work began with an algorithm for the generation of a very simple branching structure that bore only a superficial resemblance to a tree. At the same time, his studio thinking was at the level of consideration of structure and form, and he had begun to model similar tree-like roof structures in wood. His initial thinking was very simplified, but the writing of the algorithm made him think more closely about roof structures, the loads they must carry, how many of them work together to support a single roof, and how he could vary the different parameters available to him to achieve the desired effect without compromising performance.

The cyclical process of exploration, testing, refinement, and further exploration occurred with all the students. As the semester progressed into the following one, both Albert and Derek refined their ideas and consequently the imagery the computer produced. They took additional time to modify the poor graphical output by rendering the results, but by that time they understood that the computer rendering was merely a trick of presentation rather than an occupation worthy of their complete attention. Prior to the class, students often see the production of highly rendered images as an important part of the design process; long hours spent creating complex models are substitutes for actual design work. By taking this class, this classic computer design trap is made apparent and therefore avoided. Students soon become used to the poor quality of the initial graphical output and in so doing are made aware of the different languages of representation used in all aspects of the design process. Some of the images shown here are visually appealing, but they do not tell the whole story and must be seen as a part of the process of representing the students' abstract ideas concerning design and the process of design.

Derek's procedure generated more than just the spirals in Tatlin's tower; he was able to subsequently explore the relationship between algorithmic design and its use in creating highly organic forms, work that exerted an indirect influence on his final thesis project. Albert's work developed into a program able to generate different forms of complex roof structures, which he was able to make use of in both the design project of that semester and in his final thesis project. The algorithm allowed him to explore the effects of different appearances of that structure.

There are limitations to this process inherent in the software used, which is not designed for this type of activity.



It is taking a while for the students in the current class to become used to the minimal quality of line from MiniCad, which is exact but not expressive. Yet at the same time, they are excited by how much more they can do with this process than they can on paper. As the procedures progress, they are able to generate many different versions at every stage, and it is by comparing these versions that design conversations really happen. Traditional studio teaching encourages exploration of many design variations to develop student ideas, but in this case the exploration is not simply encouraged, it is a necessary part of the process. As a student works through a set of variations, and begins to talk about why one is better than another, she becomes aware of her own thought processes. Both Albert and Derek separately spoke of how the class had given them the opportunity to discover their own preferred style of design. This was not a superficial style, but a deep seated sense of what common themes run through their work in all of their projects. Developing a self awareness of personal style in every student is a difficult task for a design studio, but by using a computer to generate their ideas, this class gives students the opportunity to do that.

1 Resnick, Mitchel. 1995. Turtles, Termites, and Traffic Jams. second ed. Cambridge, Mass.: MIT Press.

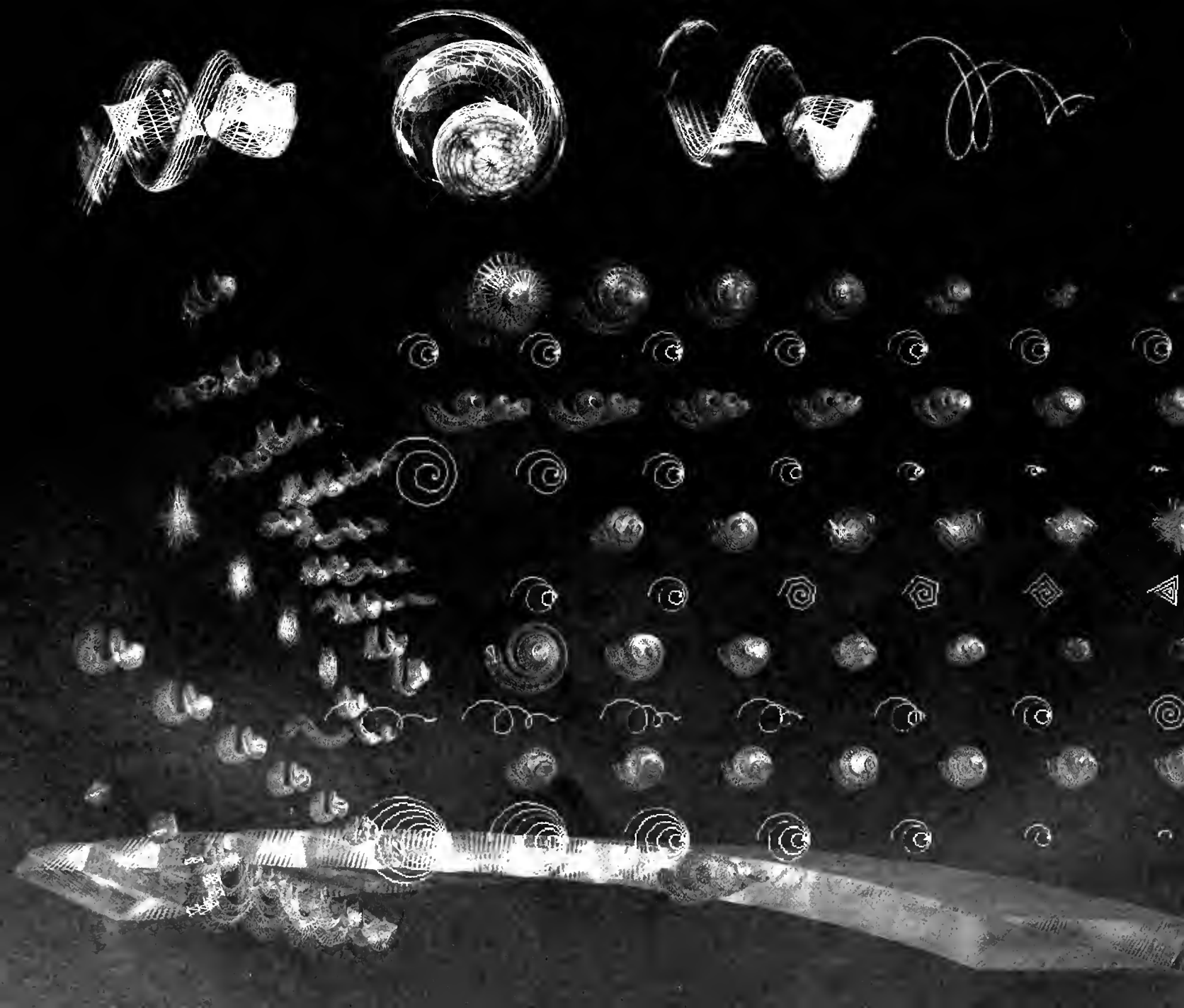
2 The use of the computer during this process is similar to the use of the computer in Resnick's classes with children using his software StarLogo.

3 Schön, D. A. 1985. The Design Studio; an exploration of its traditions and potentials. London: RIBA Publications for RIBA Building Trust.

4 Turkle, S., Papert, S. "Epistemological Pluralism: Styles and voices within the computer culture" in Harel, I. Constructionist learning : a 5th anniversary collection of papers reflecting research reports, projects in progress, and essays. Cambridge, Mass.: The Media Laboratory, Massachusetts Institute of Technology, pp 345–377.

Derek Fisher's thesis is a continuation of his experiences in this class. The images on the next page provided the foundation for his thesis which appears on the following pages.

- *edit_vs*

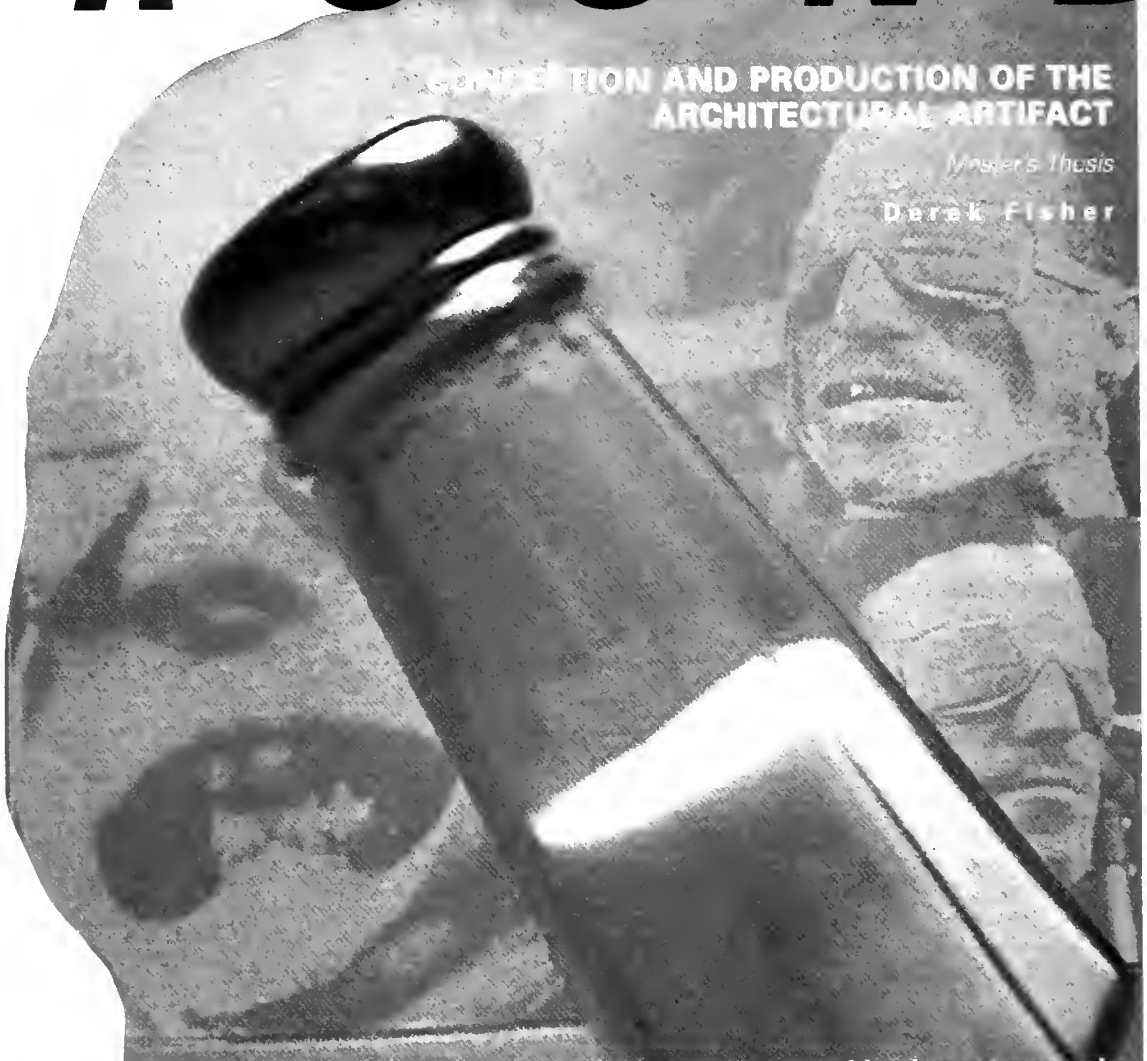


G R O U N D

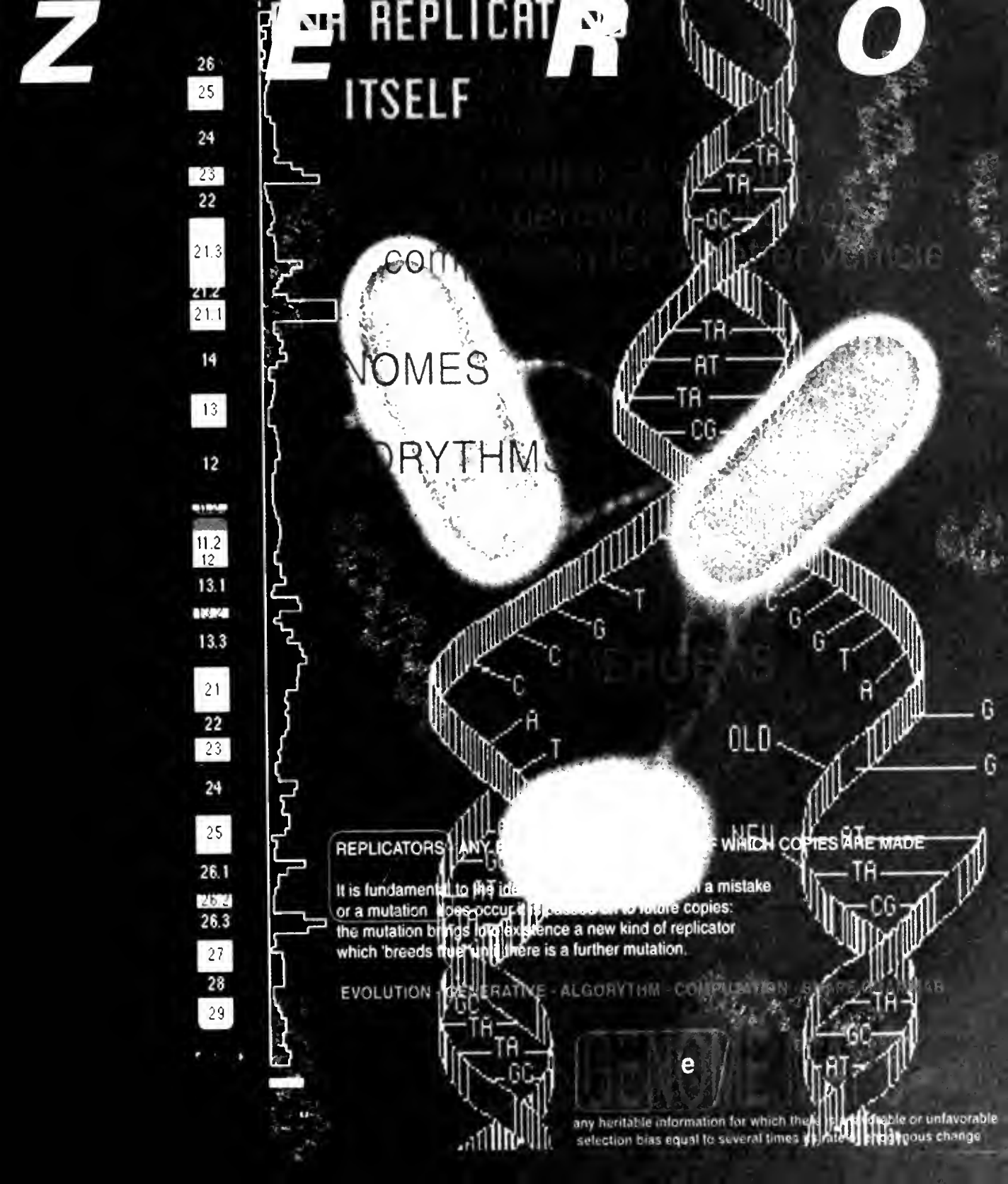
[illegible]TION AND PRODUCTION OF THE ARCHITECTURAL ARTIFACT

Master's Thesis

Derek Fisher

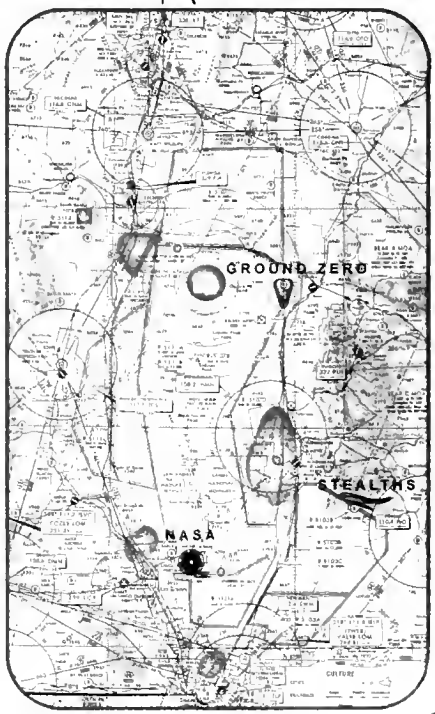


This thesis is a study of how one might investigate and implement systemic methods, relational strategies and natural phenomena into the process of design and how one might look at the architectural artifact as a biological phenomena and architecture as a magnificent contrivance of the natural world. Technologies are increasingly ubiquitous and inescapable. The subtlety of artificial manifestations upon the landscape evade the conciousness of the individual. This condition forces upon us the existence of great tension between our idealogical framework and reality. This thesis speculates upon processes of creating physical manifestations that reveal their ontogeny as adaptations derived from the extant and ephemeral patterns of the transfigured landscape and extracorporeal adaptations derived from the paradoxical dichotomies of the site.


REPLICATORS
ITSELF
NOMES
RYTHMS
TA
GC
AT
CG
OLD
NEW
EVOLUTION
ALGORYTHM
e

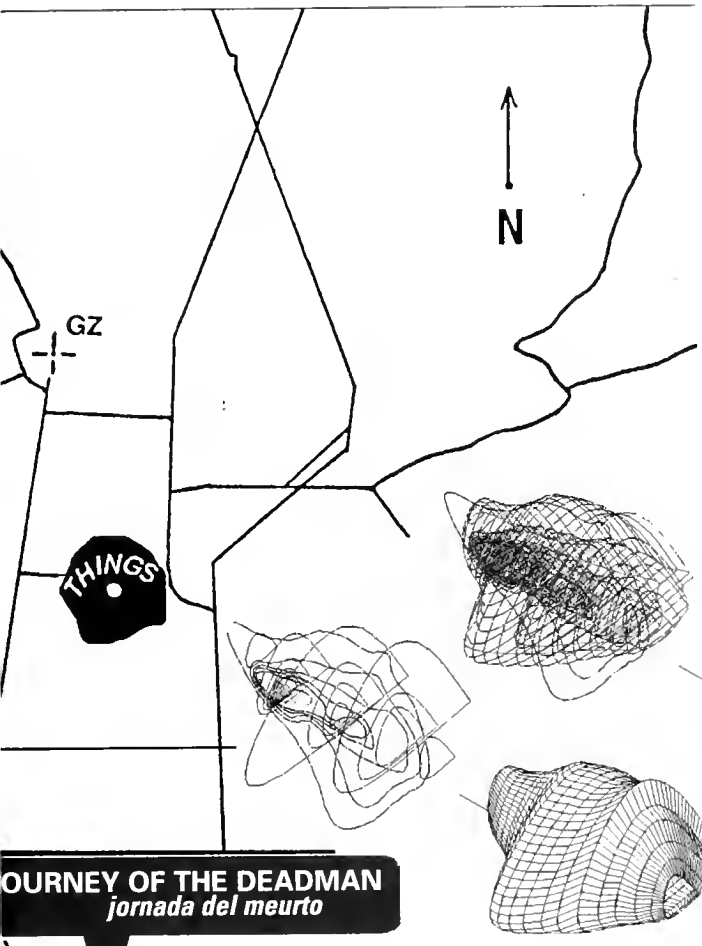
An irreversible transition occurred with the modern synthesis of Darwin's idea of natural selection and Mendel's discovery on genetics. This convergence of knowledge realized that there was an elegant information system which carried all the instructions for the gestation and development of organisms. This was the dawning of the bio-information era and the beginning of a more profound convergence of biology with electronics, of the biological revolution with the information revolution. Systems that utilized electronic devices to assist humans in the performance of difficult and intricate tasks, or "bionic" systems, are demonstrations that genetic, cultural, and symbolic systems can be combined to perform hybrid functions.

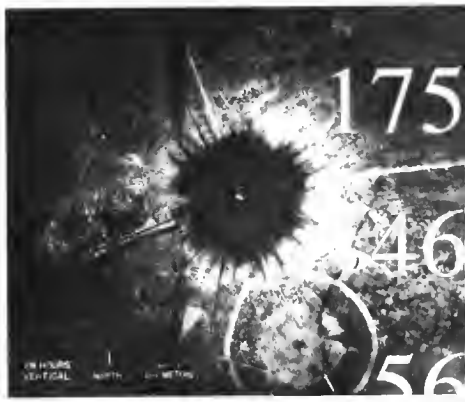
Goonatilake explains that there are three lineages of information each with its own speed of evolution; each is more adaptable than the one that came before it and each new lineage transforms the one that preceded it and created it. It is clear that the last of these, the exosomatic lineage consisting of artifacts and most notably the computer, is evolving at neck breaking speed.[1] This change brings with it a host of new rules in the biological evolution of species and the ecological working of the planet itself because of the intricate relationship of the three lineages. This development has led to new technologies and the creation of new fields and industries such as bio-technology, bio-remediation, bio-mining, bio-materials, and bio-energy. Complexity theory has also found practical application with the implementation of current knowledge and technology.[2] A shift has occurred in the boundary between what is given and what is made, with an emphasis on the replacement of inorganic with organic and vice-versa. In this light, long standing dualisms and dichotomies, such as the architectural traditions of organic versus rational, may be seen as crippling to objective thought because of the advancement in understanding of natural phenomena.



[1] S Goonatilake, The Evolution of Information Lineages in Gene, Culture, and Artefact, London Pinter (1991)

[2] Walter T Anderson Evolution isn't what it used to be the augmented animal and the whole wired world USA W H Freeman and Co (1996)





OURNEY OF THE DEADMAN
jornada del meurto

Trinity Site

GZ

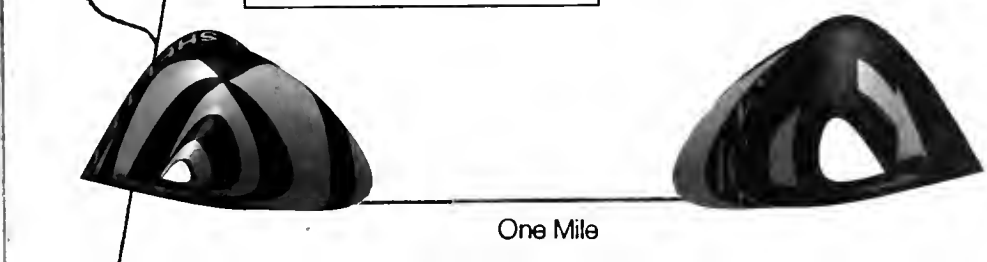
JOURNEY OF THE DEADMAN
Mileage Chart

San Antonio to Stallion exit	12
Carrizozo to Stallion exit	3
Highway 380 to Stallion	5
Stallion to Trinity	17
San Antonio to Socorro	10
San Antonio to Albuquerque	31
San Antonio to Las Cruces	130
San Antonio to El Paso	5
Carrizozo to Tularosa	46
Carrizozo to Alamogordo	56
Carrizozo to El Paso	146
Trinity Site to Alamogordo	85

N

VIA THE CARAVAN

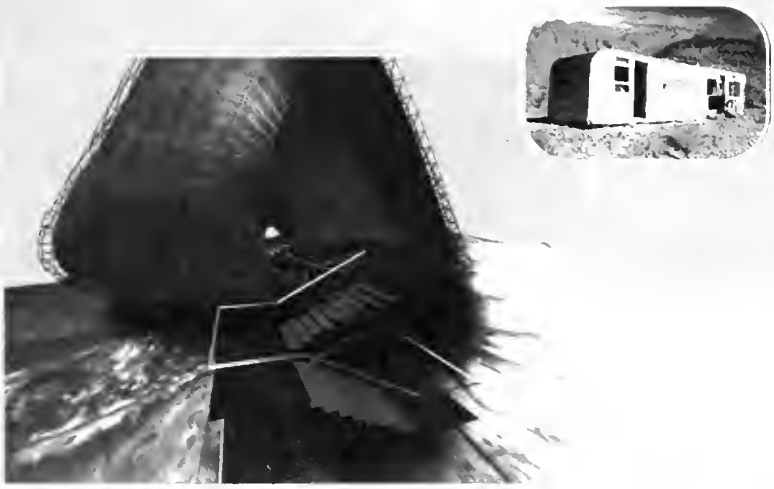
ROENTGENS



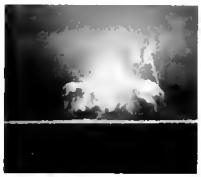
One Mile

History, Movement, Speed

Form in nature is a product of movement. Kinesthetic forms reveal a movement that is directly perceived but even static forms have histories that reveal the flow and movement of their morphology. Form flows in lines of least resistance as forces act upon it.

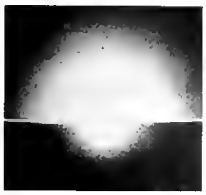


Degrees of development in nature and in organisms operate at differential speed, rate and relation depending on the level on which you are observing. Movement through time is relative to the medium in which it is operating. Biological movement operates through millennia because of the replicating DNA that it must flow through in the process of natural selection. Cultural movement occurs over years. Ideas that take form may be transformed through exosomatic movement, that may take form in books or digital media, which may change in a matter of seconds. Memory, history and moment.



Autolisp Language

```
(command "layer" "new" "spiral" "color" "10" "spiral" "")
(command "layer" "new" "axis" "color" "cyan" "volumes" "")
(command "layer" "new" "vlines" "color" "1st" "vlines" "")

(setq lastpoint (list 0 0 0))
(defun dspiral (bpoint revs strad hfac vfac ppr axis
  ang dist rp ainc dhinc dvinc circle dv)
  (command "layer" "set" "spiral" "")

  (setq vfac (- 0.0 vfac))
  (setq vfac 0.001)
  (print "vfac= ")
  (print vfac)
  (setq circle (* 3.141596235 2))
  (setq ainc (/ circle ppr))
  (setq dhinc (/ hfac ppr))
  (setq ang 0.0)
  (setq dist strad)
  (setq dv 0.0)
  (setq dvinc 0.0)
  (command "pline" bpoint)
  (
  3D spiral
  (setq dv 0.0)
  (setq dvinc vfac) (setq dvinc (/ vfac ppr))
  (command "3dpoly" bpoint)
  )
  )

  (setq bbpoint (list 0 0 0))
  (repeat revs

    (setq count 1)
    (repeat ppr
    (print "count= ")
    (print count)
;; returns a point at specified angle and distance
;; from supplied point
    (setq rp (polar bpoint
    (setq ang (+ ang
                 ainc))
    (setq dist (+ dist
                  dhinc))
    )

    ) ;; rp

    (if vfac
    (progn
    (setq rp (list (car rp)
                   (cadr rp)
                   (+ dv (caddr rp)))
    )
    (print "dv= ")
    (print dv)
```



```
    (print "dvinc= ")
    (print dvinc)
    (print "- - - - -
    (setq ds (+ ds dv dvinc))
    (setq dvinc (- dvinc (+ 1
    )
count 10000) 1))

    (if
    (setq lastpoint rp)
    (setq bpoint (list (+ (car bpoint) axis)
(cadr bpoint)
(caddr bpoint)))

    (print "car bpoint=")
    (print (car bpoint))


    (setq count (+ count 1))
    (command rp)  ; continue to the next point

    )  ; repeat ppr
  )  ; repeat revs

(command "")                    until done
(princ)
)  ; defun spiral

(defun axis (pt1 pt2)
  (print "- - - - - - - - - - - - - - - - -")
  (print bpoint)
  (print bbpoint)
  (command "layer" "set" "axis" "")
  (command "line"
           pt1
           pt2 ""))

(defun vspiral (bpoint revs strad hfac vfac ppr axis
          ang dist rp ainc dhinc dvinc circle dv)

(command "layer" "set" "vlines" "")

(setq bpoint (list 0 0 0))
(setq vfac (- 0.0 vfac))
;(setq vfac 0.001)
(print "vfac = ")
(print vfac)
  (setq circle (* 3.141596235 2))
  (setq ainc (/ circle ppr))
  (setq dhinc (/ hfac ppr))
  (setq ang 0.0)
  (setq dist strad)

  (cond ((= vfac 0.0)
                    ; spiral on plan
                  (setq dv 0.0)
                  (setq dvinc 0.0)
                                        (command "pline" bpoint)))
```

Aron Vinegar

CONTINGENCY AND FLEXIBILITY IN THE PONTIAC BUILDING

The Pontiac Building was constructed as a speculative project by the architectural firm Holabird and Roche between 1889 and 1891 on Dearborn and Harrison streets in Chicago's South Loop. The clients were Peter C. Brooks, a Boston real estate investor, and his Chicago real-estate agent, Owen Aldis. Because this area was becoming known as Printer's Row, it is often assumed that the Pontiac Building was intended (planned) for printers and publishers from the outset. However, the working drawings for the building and two important letters written by Aldis to Brooks reveal that this was not the case. The building went through many changes from its initial stages in 1884 up to and during its construction between 1889 and 1891. As Aldis noted in a letter of 1885, "the building is as flexible as possible, and can be used for many purposes and easily changed."[1] This was not simple indecision. Flexibility was consistently "designed-in" during all stages of planning and construction.

This built-in flexibility is particularly striking in light of accounts of the development of American architecture and urbanism offered by the contemporary architect and theorist Rem Koolhaas and art historian Hubert Damisch.[2] Damisch and Koolhaas argue that American modernism in architecture and urbanism was unformulated and unconscious, in contrast to the highly theorized self-consciousness of European modernity. As Damisch put it, "By remaining implicit, the growth of New York and Chicago takes on the appearance of a natural power, if not a cataclysm."[3] In this argument, architects are considered essential elements within an economic growth cycle which they could at most contain but could not control. Here, Damisch and Koolhaas invoke a stereotypical opposition between the planned and the chaotic.

Rather than exemplifying the above model, the Pontiac project actually seems more analogous to Koolhaas' own agenda to consciously recuperate the unconscious modernism at work in early urban metropolises. Using this strategy and theory for his own architectural prac-

Dearborn Street December 1885

tice, Koolhaas attempts to recover some intentional agency by "articulating" the forces of modernization rather than merely responding to them. Architectural firms like Holabird and Roche, and real estate developers and investors like Owen Aldis and the Brooks brothers, were indeed conscious of economic and urban instability in the modern capitalist city. They attempted to integrate and anticipate this instability within their planning strategies - even if they did not explicitly theorize it as such. They too engaged in "forward-looking extrapolations"[4] and "built in flexibility"[5] as described in and about Koolhaas' own writings and projects. Instead of considering instability as a condition external to planning, as something merely to be "contained," it can be accounted for in planning. Instability is thus partially integrated and "articulated" as a pragmatic and flexible approach to design in the face of changing conditions.[6]

The design process of the Pontiac Building was a contingent and flexible one. Contingency denotes a connection depending for its existence, occurrence, or character on something not yet certain. The Pontiac was not only a speculative building, but one sited in the still underdeveloped area of lower Dearborn Street. To respond to such conditions it had to be flexible, as Aldis noted in his 1885 letter. Flexibility is the capability to adapt to new, different, or changing requirements materially and programatically. Thus, flexibility is a response to a condition of contingency. This does not imply, however, that flexibility is only a passive response to that condition. On the contrary, any speculative building had not only to accommodate flux and instability in its immediate economic and urban environment, but also to anticipate it. For once contingency is incorporated into the very fabric of building, architecture's viability qua architecture is called into question. In rapidly changing urban centers like Chicago, buildings that were inflexible - unable to adapt to new, different, or changing requirements - quickly became obsolete.[7] The degree of flexibility and contingency built into a structure, however, was greatly dependent on its location. In

various areas of the Chicago Loop in the 1880s and 1890s, there was still a high degree of indeterminacy. Railroads and other civic infrastructure were by no means fixed, and the formal and economic configuration of the city was rapidly changing.

The land for the Pontiac Building was prime speculative real estate in the mid-1880s. Peter Brooks purchased it from the C. & W.I. Industrial Railroad in 1884. Lower Dearborn Street had just begun to extend southward from Madison Street in the early 1860s and was anchored at its terminus by the Dearborn Street Station constructed between1883 and 1885.[8] Dearborn was thus ideally situated between the commercial center of the Loop and the station. Largely undeveloped, Dearborn Street had not even been paved up to the Pontiac site as of December 1885. Thus, it was by no means obvious that this area would become a center of the printing industry.

The Pontiac was not designed as a predetermined entity, a building intended for the printing industry from the outset. Knowing this, the problem of planning can be tackled materially and the temporal dynamics of this project can be addressed. The Pontiac Building had multiple, overlapping plans, that were worked out and deposited in material traces such as letters, drawings, and the actual structure. These plans have different temporalities even though they are threaded through, or located in, a single building. As Henri Focillon wrote, "From the fact that various modes of action are contemporaneous, that is, seized upon at the same moment, it does not follow that they all stand at an equal point in their development."[9] Through flexible planning, the Pontiac could respond to both immediate rental needs and less immediate ones imagined in the future life of the building.

The letters written from Owen Aldis to Peter Brooks in 1885 outline in detail the vicissitudes of the planning process.[10] There were at least four overlapping but distinct plans or projects for the building: a loft for light manufacturing, a loft/office building, an office building, and a hotel. In addition, approximately seven stores were planned for the first floor. It appears that the loft for light manufacturing was deemed the most likely prospect at this early date. Some clothing manufacturers had expressed an interest in the project, perhaps for the rental of some upper floors with good lighting. A notice in the Building Budget, however, written a few months after the letters, indicated that the Pontiac Building would be used for storage but could be turned into offices.[11] This type of hybrid loft building was common in both Chicago and New York.

Aldis also planned for the Pontiac's future use as an office building or hotel. In the 1885 letters, he was preoccupied by the heavy stone piers planned for the four corners of the building, noting that they dramatically increased its weight and cost. This extra weight was deemed aesthetically and functionally necessary if the building was used for a hotel. If used merely for stores, they would have to be replaced with iron and plate glass.[12] Although the weight of the piers was troublesome, they were essential in order to store numerous flues for future use in case the building was converted into an office or hotel.[13] This is the first direct link between overbuilding and flexibility in the Pontiac.

The possibility of combining different uses in the same building, or anticipating potential uses in the future life of the building, required that close attention be paid to the foundation weight,[14] live and dead-load capacity of each floor, and types of materials used in construction. Aldis indicated in the 1885 letters that if the building was used for light manufacturing, the occupants should not load floors over 150 lbs. per square foot. The standard live loads for buildings at the time were as follows: 150 1bs. per square foot for stores, factories, warehouses, and manufacturing use; 120 pounds for

public assembly use; 100 pounds for office use; and 70 pounds for apartment buildings. Aldis and company chose the maximum live load for the Pontiac Building whether or not it was going to be used for light manufacturing. Such overbuilding, or building to the maximum capacity live-load use possible, countered one of the major oppositions made during the late 19th century to the highrise building, as cited by scholars Carl Condit and Sara Bradford Landau: "the building designed exclusively as office space results in low-unit floor loading, making it impossible to convert to other purposes such as warehouses, library, or public use."[15] Although this limitation could be overcome at a later date if the owner was willing to spend the money, it was probably more economical to overbuild from the outset, anticipating possible changes of function in the future life of the building.

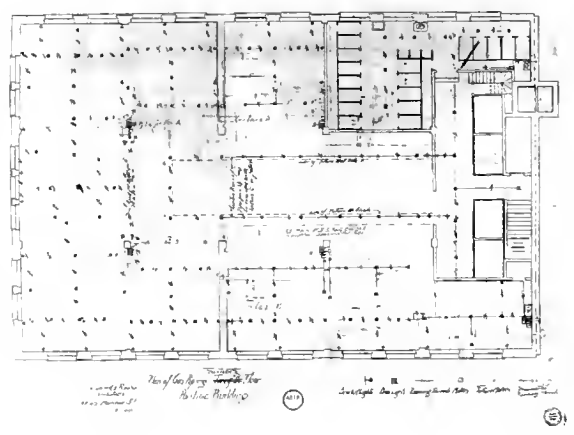
Flexibility also required the shifting of partitions and quick subdivision of floors to suit tenants. According to the 1885 letters, stores were alterable to any configuration. Also as Aldis noted, "If changed to a hotel or office building, all the partitions are to be of very light hollow tile, and the building is constructed strongly enough to support such partitions and extra weight easily."[16] And indeed it was, because the building was overbuilt to support light manufacturing. The Pontiac's combination of iron structure and load bearing walls formed a strong armature that increased stability and potential alterability. The need for such an armature is prescient considering the following passage taken from the June 1885 letter: "Please observe along the iron girders where dotted lines go...so that the joists and flooring may at any time be taken out in the center of the building, with small trouble and expense, and a shaft for light with skylight put through the center of building if changed into an office building or hotel."[17] To allow this sort of negation of its own structure, excess weight was necessary to keep the building programmatically flexible yet structurally stable.

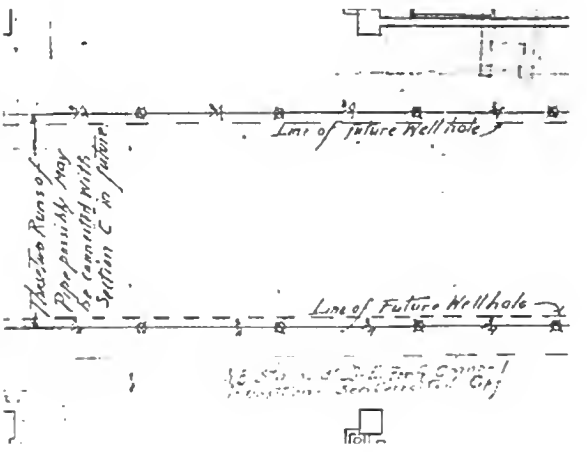
By July of 1885 Owen Aldis and Peter Brooks postponed construction due to the underdevelopment of the area and the desire for a stronger and cheaper building. The Pontiac site was too risky, as Dearborn remained unpaved in this area and building development had not extended far enough south to assure Aldis and Brooks that their building would not remain stranded on its lot. It appears that no construction was undertaken until 1889. An August 10, 1889 article in the Economist indicated that construction had begun on a twelve story building on the Pontiac block. In another article from September 7, 1889, the building was advertised as a "first class office building with floors heavy enough for printing and light manufacturing purposes."[18]

It appears that the building was over-programmed to compensate for the uncertainty of the urban environment. One might expect the program would solidify as the building neared completion. The above-mentioned article indicates, however, that this was not entirely the case. The working drawings for the Pontiac Building, preserved in the Chicago Historical Society, suggest that flexibility remained a major concern throughout the construction process.

A floor plan published soon after completion and a photograph of the building under construction show its major features. These include two large piers of stone and brick in the southwest and southeast corners of the building, two interior bearing walls of brick, and a party wall to the north. The building now had a hybrid frame of steel and load bearing interior walls which provided a more rigid structure than the one described in the letters. Holabird and Roche were experimenting with such hybrid constructions in other buildings at the same time. In the Tacoma building (1886-1889), for example, the interior load bearing walls function as both wind bracing and support.[19] This type of armature created a rigid perimeter around an interior core that could then be easily manipulated.

Gas piping plan showing "future well hole"

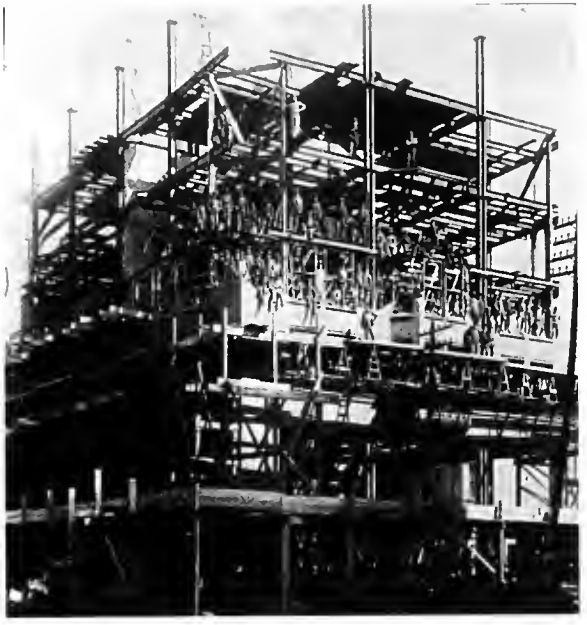




In the gas piping plans for the building a dotted rectangle in the center of the building indicates where a future light court could be cut out from the solid structure of the building's girders, frames, joists, and flooring. The light court would have extended from the third to the thirteenth floor.[20] The floor framing was designed to support the weight of the light well's presumably terra cotta or brick interior walls. In the third floor framing plan, the rectangular light well is clearly marked, corresponding to the dotted lines in the gas piping plans. Girders run east-west in the building except the ones in the center which run north-south: this would presumably facilitate their removal. Also, the framing is much stronger on the third floor than on the second to support the light court beginning at this level.[21]

The framing and gas piping plans are heavily used working drawings with numerous additions, revisions, and deletions, including the change from a twelve to fourteen story building in mid-construction. Thus the projected light well, first indicated in the 1885 letters - and evident in the 1889 plans - is probably calculated into the building but was never activated, never cut out. However, it informs the building structure and the distribution of conduits, pipes, and wires that were routed in order to avoid the future light-well area. The light well remained latent within the structure, anticipating the building's possible future transformation.

An Economist article of January 31, 1891, indicated that construction had been completed on the fourteen story Pontiac building. It states, erroneously I think, that the building was originally intended for the printing industry, but as the building neared completion, they decided to finish up the floors for offices, "and lease to those desiring large amounts of space, moderate rents, and excellent light."[22] This change from light manufacturing to office space at such a late stage was facilitated by the building's flexibility. The flexibility was designed into the Pontiac's structure from the outset, although not all of the building's latent programs were activated.



1 Owen Aldis, letter to Peter C. Brooks, 20 June 1885, p.10. Brooks Family Papers, Chicago Historical Society Architectural Collections. Although the letter is in typescript, there are many additions in pen, including this passage, which represents a material instantiation of the flexibility he is writing about.

2 In particular Rem Koolhaas, Delirious New York: A Retroactive Manifesto for New York (New York: The Monacelli Press, Inc, 1994) and Sanford Kwinter ed., Rem Koolhaas: Conversation with Students (Houston and New York: Architecture at Rice Publications and Princeton Architectural Press, 1996); and Hubert Damisch, "The Manhattan Transfer," in Jacques Lucan ed. OMA-Rem Koolhaas: Architecture 1970-1990 (Princeton: Princeton University Press, 1990), pp.21-31. Hubert Damisch, "La Scène de la Vie Future," in J.L. Cohen and H. Damisch eds., Americanisme et Modernité: L'ideal américain dans l'architecture (Paris: EHESS, Flammarion, 1993), pp.9-24.

3 Hubert Damisch, "The Manhattan Transfer," p. 24.

4 Sanford Kwinter ed., Rem Koolhaas: Conversation with Students (Houston and New York: Architecture at Rice Publications and Princeton Architectural Press, 1996), p.47.

5 Sanford Kwinter, "Flying the Bullet, or when did the future begin?", in Rem Koolhaas: Conversation with Students, p. 80.

6 Koolhaas articulates this in the following way: My work is deliberately not utopian. . . .In other words, for me the important thing is to align and find articulation for those forces (Modernization), again, without the kind of purity of a utopian project"., Rem Koolhaas: Conversation with Students, p.65.

7 The acknowledged of this potential obsolescence is well described by Robert Bruegmann in his excellent book, Architects and the City: Holabird and Roche of Chicago, 1880-1918 (Chicago and London: The University of Chicago Press, 1997), p.113: "The recognition that buildings had finite lives led to an entire new branch of real estate accounting: depreciation, the calculation of the amount of money needed to replace a building at the end of its useful life." One can only posit that it behooved investors to counteract this redundancy by making their buildings as flexible as possible.

8 The railway was an obvious catalyst for construction in this area of the South Loop. For a detailed account of the development of Dearborn Street and the Brooks Brothers' speculations there, see Gerald Larson, "Chicago's Loop, 1830-1890: A Tale of Two Grids," in Fragments of Chicago's Past: The Collection of Architectural Fragments at the Art Institute of Chicago, ed. Pauline Saliga (Chicago: 1990), pp.73-77.

9 Henri Focillon, The Life of Forms in Art (New York: Zone Books, 1992), p.140.

10 Owen Aldis, letter to Peter C. Brooks, 20 June 1885 and Owen Aldis to Peter C. Brooks 7 July 1885, Brooks Family Papers, Chicago Historical Society Architectural Collections. In the first letter Aldis states that plans, sections, and elevations were made in 1885; however, these drawings are now lost or destroyed. Thus the only evidence for the Pontiac Building between 1885 and 1888-1889 is the letters and sporadic notices in real estate journals.

11 Holabird & Roche/Holabird &Root: An Illustrated Catalog of Works, 1880-1940 3 vols. (New York: Garland, 1991), p.41.

12 Aldis anticipated that in a few years there would be a demand for plate glass show windows at this corner.

13 Central heating was not introduced until the 1890s. A hotel or office thus presumably had a fireplace in each room with individual flues. The flues would apparently have been run up through the hollow piers. The letters also indicate that openings for the fireplaces and brick hearths would be blocked up until needed in the future

14 Issues of the Economist from this time period are full of notices indicating that foundations were overbuilt to allow for the construction of additional floors at a later date. This aspect of overbuilding will not be addressed here.

15 Sarah Bradford Landau and Carl W. Condit, Rise of the New York Skyscraper, 1865-1913 (New Haven: Yale University Press, 1996), p.187. Landau and Condit mention the Havemeyer building in New York, an office building constructed in 1891-93 which had an interior framing that was designed to support 200 pounds per square foot—"an unusually high floor loading factor for an office building," they note. Indeed it was, as only 100 pounds per square foot was required according to New York building codes.

16 Owen Aldis, Letter to Peter C. Brooks, 20 June 1885, p.8. Flexibility in partitioning was later codified by Aldis in his fundamentals of Office building (1893) as quoted in Earl Schultz and Walter Simmons, Offices in the Sky (Indianapolis and New York, 1959), p.34., "carefully consider and provide for changes in location of corridor doors, partitions, light, plumbing, and telephones." Flexible partitioning became a standard feature in high rise buildings and a powerful selling point that was explored to full advantage in such publications as the Chicago Office and Building and Central Business Directory. What is important to note for the Pontiac Building is that what was later called "progressive styling" (Flexible partitioning) was built into the planning process from the outset.

17 Ibid., p.7.

18 Bruegmann, Holabird & Roche/Holabird &Root: An Illustrated Catalog of Works, p.44.

19 Bruegmann, The Architects and the City, p. 83.

20 For a different elaboration of the vicissitudes of the construction process and the role of working drawings in contemporaneous architectural production, see Clare Cardinal-Pett, "Necessary Excess," Journal of Architectural Education (September, 1997), pp.46-60.

21 Personal conversation with Steve Kelley, structural engineer, Wiss, Janney, & Eltsner, Chicago, Il, 31 March 1998.

22 The Economist (31 January, 1891), p.167.

A SYSTEMS APPROACH TO CONCEPTUAL DESIGN SOLUTIONS

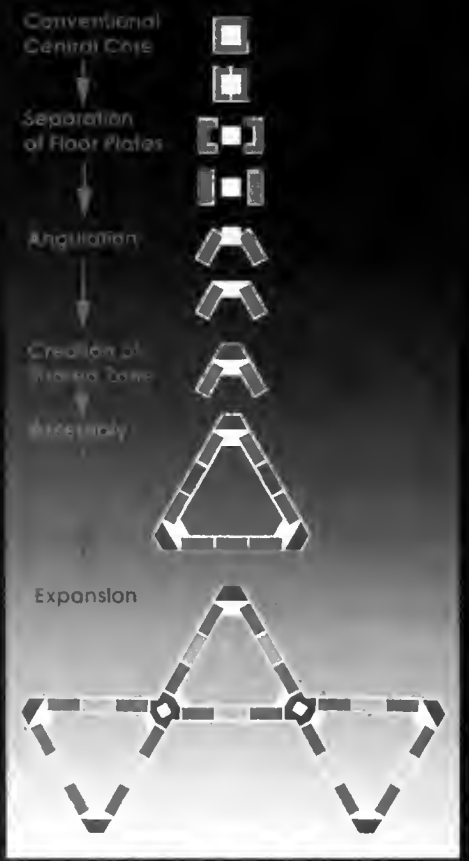
A Very Tall Building in Hong Kong

Wolfgang Ungerer

"Cities are the principal localities and residences of man as a biological group. They are the coral colony for man as a social being. Is there any point here in positing an opposition between the country and the city? One can find much that is weak and dangerous about cities, one can take sides in the conflict of the impulses that are fermented in them; but one cannot dismiss or in any way assume to appraise cities themselves, the focal points of the human urge to live in societies."

Alfred Döblin, in The Spirit of the Naturalistic Age (1924)

"Make no little plans; they have no magic to stir men's blood." Daniel Burnham



Above: Primary Systems include Structure, Habitation, Transportation, Utilities, and Climate Control
Middle: Lay-Out Strategy
(Evolution from the Central-Core Building)
Opposite Page:

Top: Typical Floor Plan
Middle: Diagrammatic Master Plan
Bottom: View of Proposed Tower in Site

This thesis represents a design investigation that seeks to reconsider the high-rise building as a concept for urban habitation against the background of Hong Kong's rapidly expanding population, its geographic constraints and its changing economic base. Given the need to provide significant urban system expansions into the next century, a concept was investigated that may lead to a new building type. Emerges out of the legacy of tall buildings, it proposes a new signification for living and working in the vertical. The idea explores a mixed-use tower that accommodates activities that can be found in any active urban setting—work, residential, entertainment, exhibition, recreation, sports, retail, education, health care, administration and light manufacturing—all accommodated within one hierarchically organized, modular structure. The result is a building that provides an intense concentration of resources and delivers a high degree of control, connectivity and adaptability.

A Critique

The initial design approach and resulting strategy is based on a critique of a number of shortcomings of existing high-rise buildings. In most designs studied the central-core plan is the predominant organizational element and constraint for building to excessive heights. Apart from certain structural benefits, single-elevator hoist-ways as used in today's high-rise buildings, create considerable proportions of dead space within buildings (up to 40% of total floor area). The tall building must become more dynamic in its internal arrangement and organization in order to address the constantly changing needs of its users.

Alternative Strategy

The building strategy is based on the concept of a triangulated mega-frame structure of roughly 50,000 sqm footprint that rises at a 1:5 aspect ratio to 1560m of height. The building is organized in components of varying sizes. Interspersed between habitable modules are lobbies and spaces that act much like public places of a city. The basic module is an adaptable and suspended eight-story unit (*Pod*). Clusters of 30 such pods, connected in pairs by common atria, form one planning unit of 242m in height. This unit is serviced by a centrally suspended structure which acts much as a city plaza/square. Approximately six of these planning units rise to make up the building. Woven into this assembly of modules, lobbies and plazas are vertical and horizontal connections, like streets. These connections are organized to provide for movement at different speeds and distances. Anticipated occupant volume is about 125,000 persons.

Site

The site chosen for the thesis proposal corresponds with the site of the existing Kowloon Station Development. The site itself was created in the past few years in the context of large scale land reclamation west of Kowloon (some 340 ha). The site is centrally located amidst major transportation links (road and rail) thus ensuring intense accessibility. Another significant feature of the site is its spectacular views onto Hong Kong Island. Furthermore, the proximity to Kowloon's commercial district provides for opportunities.

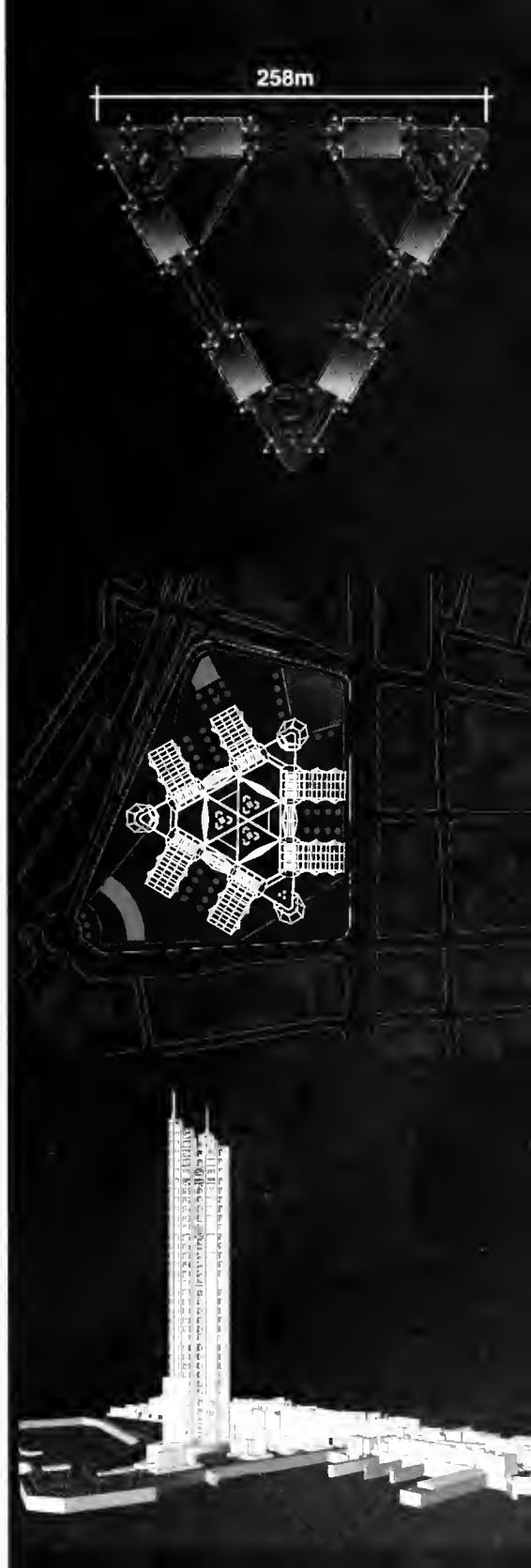
Design Considerations

• Services & Compatibilities:

There is a need to create a service interface at Podium level so as to establish compatibilities between commonly used service infrastructure (cars, rail etc.) and building services. The latter are designed for performance in the building. However, compatibility with standard cargo and other freight deliveries is seen necessary for successfully operating the two in parallel. The increased need for utilities is expected to be proportionally higher than for transportation upgrades. This is largely a consequence of the relative autonomy of the building. The building is designed to operate partially as a self-supportive unit. As a result, a 60% in-house occupancy rate has been targeted (60% of adult residents/households work or remain within the building for most of their affairs).

• Aesthetics & Image:

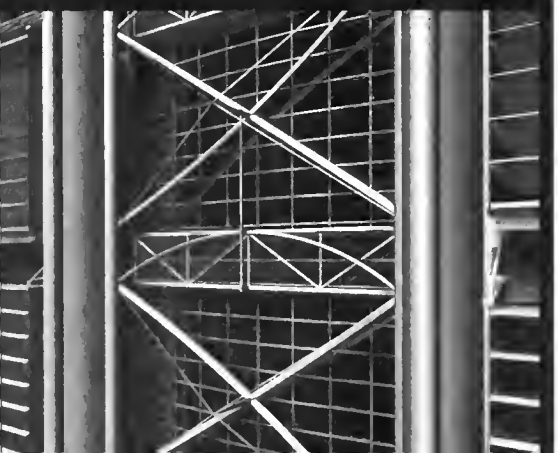
Throughout the design, the construction systems are displayed in their organizational composition. The structure is expressed externally and internally. A limited vocabulary of colors and materials was chosen (aluminum cladding for its practicality and resistance to weathering) and tinted glass. An important feature of the building's dynamic appearance is the explicit display of the mechanical systems. It is intended that the building comes alive with use. Horizontally moving capsules will be seen from outside (or inside), external sun shades move and change angles as the day progresses, internal balconies get greened, occupied and inhabited. The transformation of the skin will lend the building an almost robotically animated image. Thus there exists a notion of an 'aesthetic of the machine', which is more pronounced on the exterior where the facade represents a functional interface between different climate conditions. In contrast, the interior is rather more 'humanized', 'messy' and appropriated by the occupants.



Above: Primary Systems include Structure, Habitation, Transportation, Utilities and Climate Control

Middle: Pod within Mega-Frame Support Structure (Note Floor Frames act as Horizontal Trusses)

Below: Light Well in between Pods, Connecting (2-Level) Bridge at Mechanical Level



The Systems:

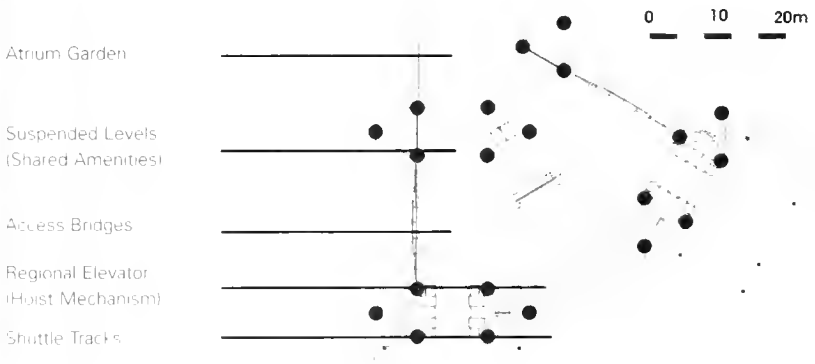
• Structure:

The structural members are largely exposed and contribute to the buildings character and appearance. The structure is highly hierarchical so as to minimize weight and make selective use of compressional and tensional qualities of the individual components. Of the requirements for the overall building structure, the response to lateral forces represents one of the greatest challenges. Wind is the predominant force that will affect the building's requirement for stability, especially typhoon winds which can reach speeds well over 200 km/h. Accordingly, the building is designed to transfer complex cumulative live loads through a composite structural mega-frame. The triangulated structure acts like a vertical truss. It is extremely stiff and performs well in twist/torque and sway. In order to counteract shear sway (horizontal displacement of the mega-frame), the triangulated form of the mega-frame is composed of laterally stiffened supercolumns. They act as vertical trusses in their own right and provide both vertical and to some extent lateral stiffening. The columns are connected by stiffeners at every 9 levels and by plaza platforms at every 45 levels. The columns are connected horizontally to one another through the supertrusses and through a cross-bracing structure spanning a 52m gap that allows light (and air) to enter the central core of the building. Due to the height of the building, the central core is lit exclusively from these openings ('light wells') and from any light that filters through the atria or the pods.

• Habitation Systems:

1-**Pods:**

The pod is the basic system of inhabitation; it is repeated 162 times throughout the building accommodating most of the building's prime uses. The standard pod is an 8-floor unit with net floor plates of 40.5m x 24 (26m with balconies) and 4m floor-to-floor height.



2-Atria:

The atria are tall open spaces with six suspended levels for meeting rooms, day care facilities, cafeterias, and health care units. Around 25%-30% of the 1830 sqm atrium is intended to accommodate gardens. Every pod is connected at one end with an atrium. One atrium and two pods form a local unit, a 'neighborhood'.

3-Plazas:

These regional units are serviced by a large 23,500 sqm plaza platform.The plaza is the main public unit in the building comparable to a large public square. Each one of the five suspended plazas accommodates general recreational amenities, such as lawns and trees, as well as particular uses, much like social centers in a city.

• The Transportation System:

By omitting the notion of a central core, movement becomes more dispersed and hierarchically broken down. As a consequence, an operating system is proposed that seeks to organize transportation much along the lines of public horizontal mass transportation. This fundamentally changes the conception of movement through the building. The organization of the entire transportation system, however, is considerably more complex than a conventional urban transportation network since movement needs to be controlled and synchronized in all three dimensions simultaneously. For the primary system a vertical track technology was chosen. Double decked shuttles run up and down the tracks, powered by linear induction motors or other compatible technologies. The shuttles represent the fastest transportation system in the building. Accordingly they only stop at the 5 plaza levels and the podium. The shuttles have the capability of loading and unloading two capsules at once. At plaza levels, the lower capsules could be transferred to the regional transportation system (serving 5 atria). The regional system would stop only at atrium levels. From there capsules would move either vertically via a cable operated lifting mechanism or horizontally to any other atrium at the same level. The vertical lifting mechanism simply attaches to the capsule and moves it upwards. Once lifted/lowered to the atria, passengers would be required to transfer to local elevator systems (accommodated in the supercolumns) to arrive at their final destination (if located in the pods). Additional cable operated elevators depart from the upper level of the atrium level to service the suspended levels with common amenities.

Top Plaza Level Capsule Interchange
Middle (Top) Shuttle Mechanism for Vertical Track Changes (Allows multiple shuttles to utilize the same track, thus increasing space efficiency dramatically)
Middle (Bottom) Typical Passenger Capsule (Capacity ca. 30 persons). Other Fittings (Medical Emergency, Garbage Transport etc.) are possible Options
Bottom Lower Capsule Dispatching to continue on Horizontal Tracks between Atria

• Climate Control

As was briefly touched upon, one design objective was to reconsider natural climate control for a building type that commonly relies on artificial cooling/heating. The proposal is to take advantage of the verticality of the building in two significant ways: (1) by using stack effect and internal winds to cool and ventilate the entire building, and (2) to use the considerable external wind speeds for energy generation (electricity). The result is a concept whereby climate control would be conducted at both regional and local (pod) levels - independently and interdependently.

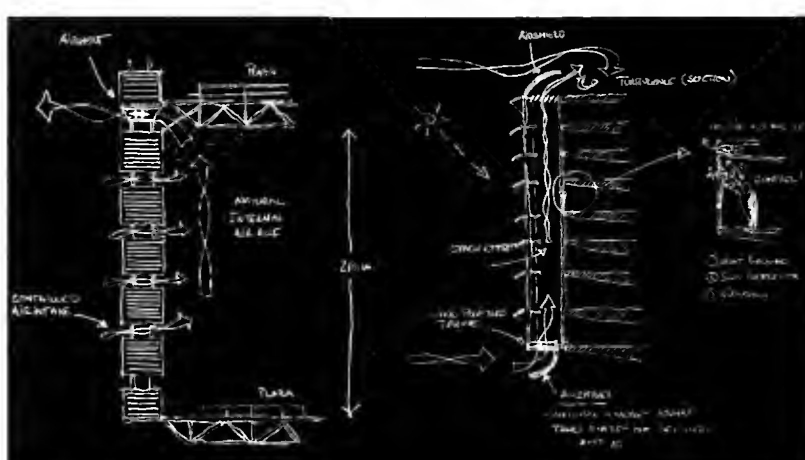
The regional system would control airflow within the central core. Internal winds would occur over the 200m core height. The strategy would thus be to control air intake through automated louver systems in the light-well glazing systems and at the mechanical level of the pods (supertruss level). The air would warm up and rise to be either pumped out through turbines just beneath the plaza platforms, or (in case where the winds have sufficient velocity) would even power the exhaust turbines and generate passive energy.

At pod level, the double skin facade uses solar heat gain to draw air in at the lower level and extract hot air at the top level. The air movement is further enhanced by attaching wind scoops/shields to the bottom and the top of the pods. Wind will be directed up through the cavity between the two skins and can pull out used air form internal spaces. At the same time, high wind velocities directed into the cavity through the wind-scoop could be dampened by wind turbines. This technology would both slow down the wind and convert the released energy into electric power.

Left: Top [illegible] Layers of Core [illegible] Elevator [illegible] Services (Electricity, Water), Emergency Stair, Horizontally [illegible] Bridges

Below Left: Building Ventilation Scheme (Stack Effect Through Internal Core Space Inbetween Plaza Levels)

Below Right: Double Skin Facade [illegible] Louvers, Wind Scoop and Electricity Generators at Bottom [illegible]



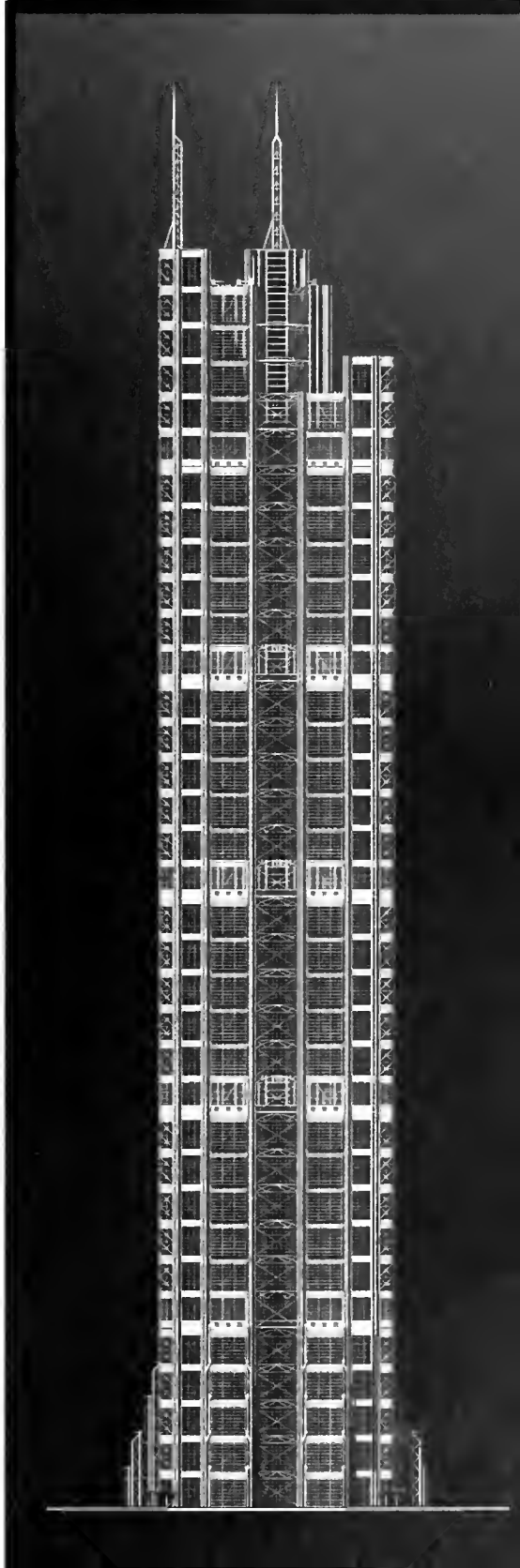
Conclusion

The proposed project represents a critique of a major limitation that high-rise buildings commonly suffer from, namely the conventional treatment of vertical spatial arrangements and connections (transport), resulting in structures with repetitive, isolated slabs and cells. Qualities of public exposure play no part in their spatial arrangements. Unlike urban entities with their diverse opportunities for interaction (streets, squares, house entrances etc.), common high-rise buildings become containers for mostly exclusive uses and one-dimensional movement patterns. The proposed project thus argues for greater connectivity within a highly subdivided structure that provides a framework for occupations and uses to higher and qualitatively superior intensities of interaction.

As was argued, spatial distance and communication have become architectural denominators in need of redefinition. The challenge to extreme building density comes no longer from considerations of zoning, FAR, investment costs, market risks etc. alone but, increasingly, from new technological substitutes in kind, extent and quality of adjacency.

Through digital communication technologies, the choices as to how we define adjacency and to what extent we control our exposure have broadened. The technologies provide us with a new perspective to evaluate qualitative distinctions between exposure and isolation, between adjacency and distance, between what represents wanted — or good — communication and what does not. This implies that technologies have reshaped the type of physical communication we seek. Accordingly, a new building type needs to provide for convenience and organization to enhance the spectrum of communication that is desirable. This makes connectivity/communication a strategic asset, the value of which is defined by its alternatives as much as by as its relative qualities.

In the end, addressing the design of an urban entity by investigating the required systems and their interdependent relationships may lead to a dangerous neglect of the potential quality of unpredictable patterns of life that will occur and be part of a building of this scale. The question is whether an organized structure such as this building provides for sufficient eventualities, for consequences of unordered life. Will squatter settlements invade the structure? Will mechanical spaces and crevices be inhabited by the poor and needy? Will street vendors offer their goods and night bazaars emerge? Or, conversely, will the building represent a more perfect entity where regulation and monitoring provides for precision that even exceeds Singapore's reputation for efficiency? Those are scenarios to which there exist no easy answers. Yet, if the systems become animated through the lifelines that make up its functional framework then the building may in fact succeed in proposing a viable alternative to a dispersed and sprawling urban life.



TRANSIENT ARCHITECTURE

on the making of the Live Room

Mark Bain

The Live Room is an intensified site where machines fuse with the architecture combining forces of action and form, structure and space. The act suggests a liberation of tectonics from the boundaries of the static, creating a place where resonant surfaces react in sympathy to induced frequencies. With this work, I am interested in TRANSDUCING ARCHITECTURE, driving spaces with external influences of a vibro-kinetic nature.

I was experimenting with vibrations. I had one of my machines going and I wanted to see if I could get it in tune with the vibration of the building. I put it up notch after notch. There was a peculiar cracking sound

I asked my assistants where did the sound come from. They did not know. I put the machine up a few more notches. There was a louder cracking sound I knew I was approaching the vibration of the steel building. I pushed the machine a little higher.

Suddenly all the heavy machinery in the place was flying around. I grabbed a hammer and broke the machine. The building would have been about our ears in another few minutes. Outside in the street there was pandemonium. The police and ambulances arrived. I told my assistants to say nothing. We told the police it must have been an earthquake. That's all they ever knew about it.[1]

- Nikola Tesla

The destructive potentials of acoustic energy

All materials have a resonant frequency. Buildings too have their own particular resonant frequency. If this frequency, also known as the value of efficient excitation, is accurately located, it is possible to use mechanical reinforcement to literally 'ring' the material, like striking a bell. And through a feedback system, it is possible to produce a phase aligned addition to this wave form where potentials for the material oscillate out of control. In 1898 the inventor Nikola Tesla was working with similar energy imparting devices which was said to be so small "you could put [one] in your overcoat pocket." The notorious event of the earthquake was said to have also created intense sympathetic vibrations two blocks away from Tesla's laboratory creating a similar extreme reaction.

projectiles

Projectiles to the Live Room

The Live Room is related to another project of mine titled Projectiles. With this earlier project I stated that "the goal is to design small scale devices which attach to the exteriors of pre-existing structures, inhabit the surfaces and exert influence on it."[2] I designed various components that when hurled at buildings would stick to the surfaces and inject different causative effects such as material dissolution and biological intrusions. This re-formative process engaged the structure as an external agent, a re-constructive parasite shaping form beyond the architect's original intention. The building therefore became the datum, the blank screen or canvas for the enabling influence to take hold. This project provided a subtractive process as a counterpoint to the purely additive tradition of the standard architectural practice. The Live Room works in a similar way to the Projectiles, engaging the architectural datum, running energy through it and sounding the structures of space.

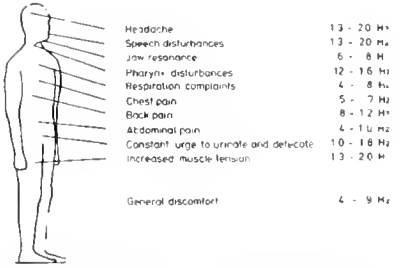


Fig. 29. Complaints in various organ regions in relation to stimulating vibration frequencies (Magid and Coermann 1960)

Like the Projectile project, The Live Room also utilizes portable equipment to infect the host site, although not as small as the devices envisioned for renegade bands of archi-terrorists which the earlier project imagined. The Live Room instead utilizes small acoustic intensifying equipment which are mounted directly to interior (or exterior) surfaces and create large scale 'tectonic charging' through vibration. By using various transducing devises and signal generation equipment, I can effectively 'tune in' a space by delivering its resonant frequency to the walls and structure of the site. Normally we think of sound as waves of energy traveling through a medium (such as air) on its way to the ear. Because the molecules are more spread out, gases like air are in fact less efficient mediums for sound to travel than liquids or solids. Therefore the solids which make up most architectural forms can be thought of as very efficient conductors of vibro-acoustic energy. In my design, I use five inch diameter plate transducers bolted to the walls, and mechanical oscillators bolted to the structural members which make up the floor. Even though these electro-mechanical device don't produce their own sound, the energy they impart changes the surfaces into what, in essence, is an infinitely large speaker. By using six or more of these specialized transducers in an enclosed space, I can drive the room with acoustic energy derived in response to the shape and material makeup of the room.

electromechanical ocillator

The project

The Live Room is an interactive vibro/kinetic environment which directly engages the architecture of the room and is controlled by the action of people as they move throughout the space. The project consists of three high speed electromechanical oscillators which are placed in the center of the room and are triggered by six separate infrared motion sensors. The oscillators are hybrid machines of my own design, incorporating elements from six large computer hardrives which are now obsolete and were donated by the MIT Computer Sciences Lab. Each oscillator consists of two hardrive disk assemblies bolted together so that the disks overlap each other and spin in opposite directions. These disks have two motors connected to them, one driving the spinning action of the disks (acting as a flywheel) and the other utilized as a power generator producing a variable voltage and frequency. These 'signals' from the six generator motors lead directly via wire to six separate electro-mechanical sound transducers which are mounted on all four walls of the space. These transducers essentially turn the wall surfaces into large speakers, imparting acoustic vibration in direct relation to the spinning oscillators. The unique aspect of these devices is the fact that they do not require any additional sound amplification or supplementary equipment to produce the acoustic events. All the sound is derived from and is the direct result of the linkage to the spinning disks.

The Live Room is sited in Building N51 on the MIT campus which was originally part of the General Radio Corporation that manufactured electronic laboratory test equipment until the 1950's. Later the building was occupied by Draper Laboratory which developed missile guidance systems for ICBMs and the Atlas rocket during the Cold War. The space being used for this project was originally designed as a specialized vibration isolation room. Because of the sensitive nature of the equipment, the workshop has eight massive concrete isolation pads which float on beds of gravel and sand and are separated from the rest of the building foundation. The pads, incorporated into the subfloor system, are surrounded by a floor plate of 1/2" thick aluminum plate mounted on a suspended girder system. By

aluminum plates on suspended girder system with two vibration isolation pads

attaching three mechanical oscillators to the main support system of this suspended floor plane, the ten by fifteen foot area acts as a planer resonator or large speaker like surface. With the use of three oscillators, the floor area essentially becomes a tunable musical instrument with harmonic pulse frequencies shifting in relation to the fundamental settings of the oscillators. When standing on this surface, the vibrations travel efficiently throughout the body. While also passing through persons who are standing on the floor plates, wave forms also propagate in one area of the floor and travel towards other areas. To help visualize the wave form propagation, fine sand is used on the floor to locate the nodal points and the active areas. This technique is an architecturally scaled version of some of the work developed by the eighteenth century Hungarian researcher Ernst Florens Friedrich Chladni.[3] His famous 'Chladni' figures utilized fine powders placed on metal plates which were activated with a violin bow. The powder medium when vibrated would suddenly organize into symmetrical patterns which corresponded to active and non-active areas. In the Chladni patterns there was also a direct relation to the material makeup of the plates, the frequency of excitation and the type of powder used. When participants walk on the floor surface of the Live Room the footsteps disturb the sand and distribute it randomly. At the same time, the vibrations of the floor induce a self organizing action onto the sand which corresponds to the shifting frequencies.

1 Article from the New York World-Telegram, July 11, 1935

2 Projectiles, Mark Bain, Thresholds 14, MIT Department of Architecture, 1997

3 Chladni Figures. A Study in Symmetry, Mary Desiree Waller, G. Bell and Sons, London, 1961

"Obsolete" Space

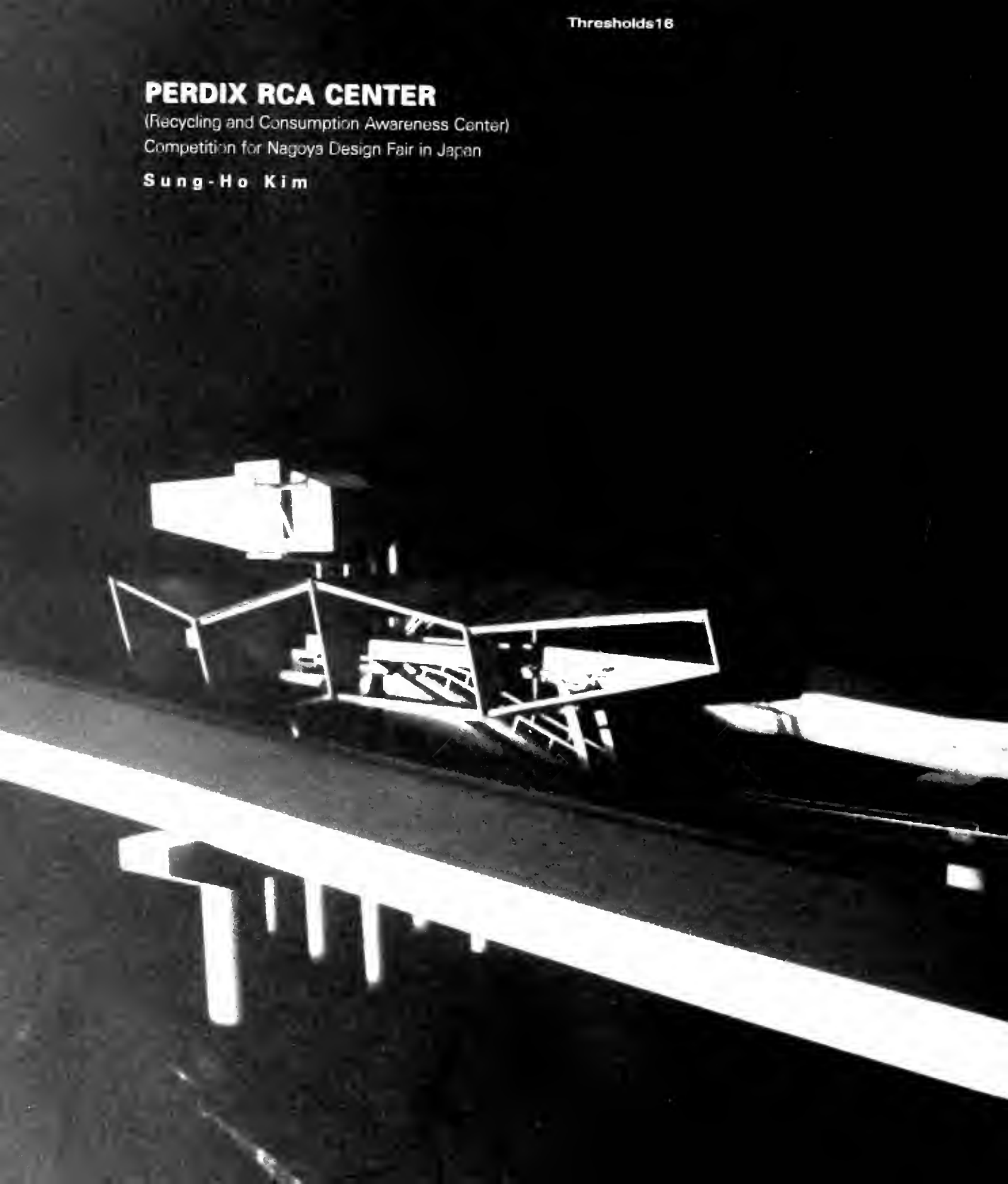
Mark Bain's 'Live Room' questions lifecycles of materials and space in a throw-away culture. By transforming an "obsolete" laboratory into an acoustically experiential space, Bain negotiates the boundaries between art and function, usefulness and obsolescence

- editors

PERDIX RCA CENTER

(Recycling and Consumption Awareness Center)
Competition for Nagoya Design Fair in Japan

Sung-Ho Kim



It (on ground) is a term from Gestalt psychology. Look at the ground around the figure of the automobile or the ground around any technology, which necessarily has a large ground of services and disservices associated with it. Now, the ordinary attention is fixed on the figure rather than the ground, on the wheel rather than the huge system of road services necessary to maintain the existence of a wheel or wheeled vehicles. With a motorcar, most people are interested in changing designs or patterns of car. They pay only incidental attentions to the huge service environment of roads, oil companies, filling stations, and other allied services of manufacturing that are the ground of a car.

Marshall McLuhan

McLuhan critically analyzes the psyche of the automotive culture. In Japan, it is much cheaper and convenient to purchase a new car rather than to fix an outdated one. The speed of manufacturing new models each year affects the shape and form of the culture. The question is what happens to the material, environmental, and ecological resources? Can we as architects re-direct and shift the flow of this consistent abuse by consumption? The design for the Recycling and Consumption Awareness Center represents a new vision for design/material/recycling system. It enhances the awareness of consumption through direct participation and advocates for an understanding of the relationship between the materials and resources we consume and the high standard of living we desire to maintain. This project is an invention for a place, space, and event that allows for the recognition of a conscience in our social and cultural fabric.

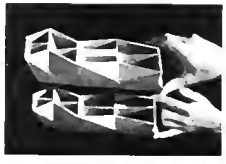
The site *offered for this competition and project is ideal for projecting an awareness of importance of individuals, governments, and societies coming to terms with the problem of recycling and over-consumption. It is important that the idea for this competition be linked to the structure itself, embedded directly into the living fiber of the city's highway system. As the site suggests, this would directly establish a link between the conditions that both cause and remedy the problems of over and wasteful use of material resources.*

The city *of Nagoya has a contemporary city-scape. Therefore, a large proportion of its communication network is automotive. Placing the RCA Center into the highway system is a high priority reminder of the importance of ecological resource management. The message transmitted by the RCA Center will rapidly spread throughout the whole network communicating a positive message of balance and continuance.*

The center *has multiple functions and can be experienced not only as a sign and symbol from the automobile, but is also intended to be visited to experience materials being reprocessed into new materials and products. Exhibitions and educational, cultural events surround the center with themes focused on consumption and resource conservation. This center serves the community on a variety of levels both as entertainment and educational.*

The name *Perdix used for the project is taken from Greek mythology. Perdix, a mortal inventor (credited in mythology for inventing the saw and compass), serves a reminder of the current need for humankind to reinvent and reinvision the relationship that has been established with nature and between each other.*

Robert O'Neal, Professor of Industrial Design, RISD



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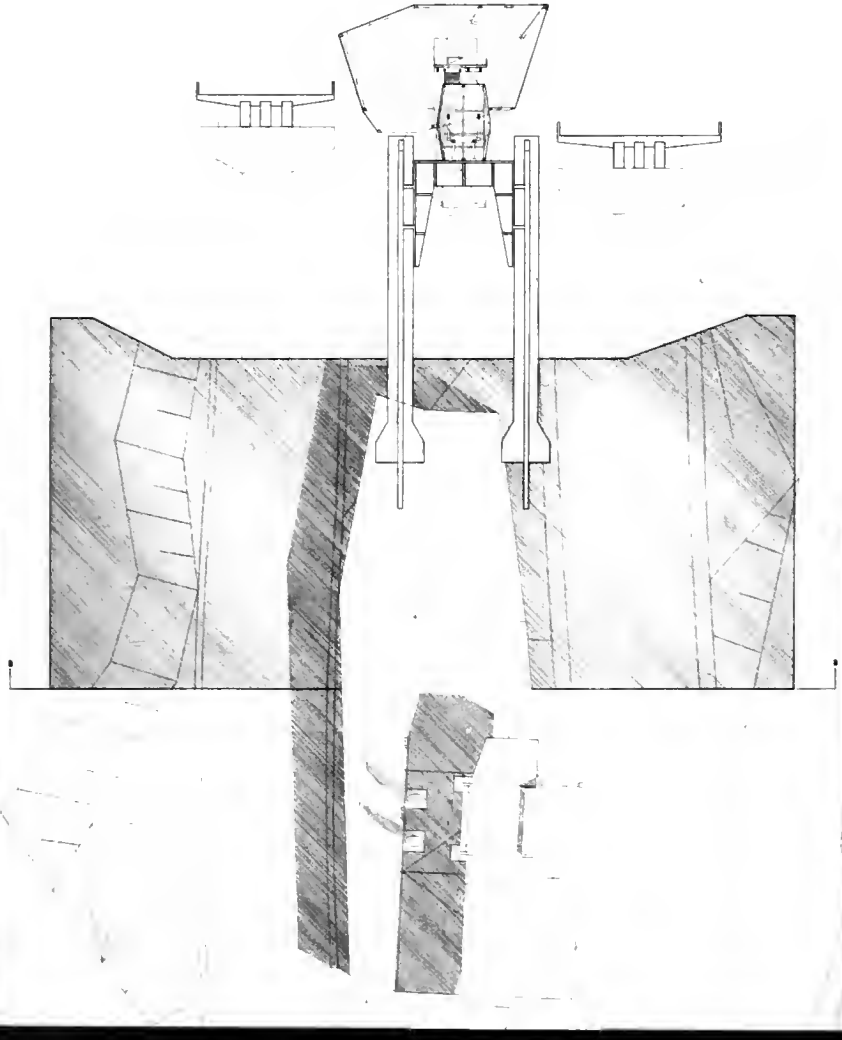

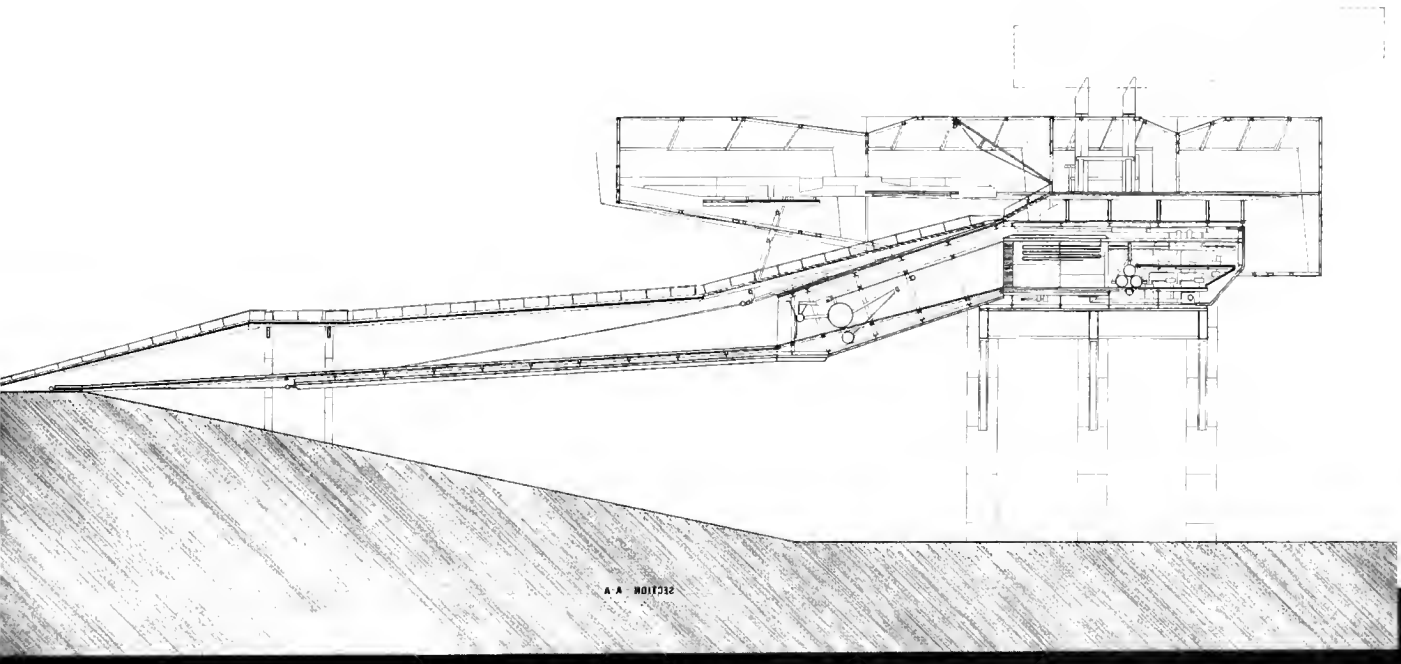
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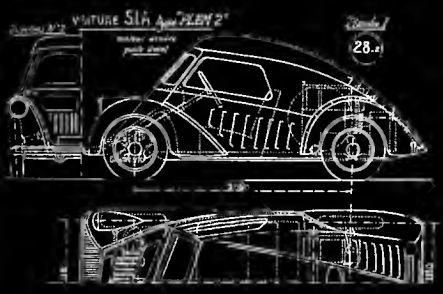
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REPRODUCTION IN AGE OF THE MECHANICAL WORK OF ART

Kevin Fellingham

This is not really about speed. It is rather about touch. A slow and gentle touch may be called a caress, if at high speed and with great force, an impact. Speed and force. Perhaps we could say it is about velocity. It may also be about the promiscuity of ideas.

If Hannah Arendt is to be believed, then Walter Benjamin desired to produce "a work consisting entirely of quotations, one that was mounted so masterfully that it could dispense with any accompanying text, "which" may strike one as whimsical in the extreme and self-destructive to boot, but it was not, any more than were the contemporaneous surrealistic experiments which arose from similar impulses. To the extent that an accompanying text by the author proved unavoidable, it was a matter of fashioning it in such a way as to preserve" the intention of such Investigations," namely " to plumb the depths of language and thought... by drilling rather than excavating"(briefe1, 329), so as not to ruin everything with explanations that seek to provide a causal or systematic connection."

While this piece is largely a concatenation of quotes, orchestrating a collision between ideas, some of which may glance off the surface of one another, others which may penetrate one another a little more deeply.

The Lives of the Artists

BALLARD, J.G.
in full JAMES GRAHAM BALLARD (b. Nov. 15, 1930, Shanghai, China), British author of science fiction set in ecologically unbalanced landscapes caused by decadent technological excess.

"Ballard, J G." Britannica Online
<http://www.eb.com:180/cgi-bin/g?DocF=micro/725/96.html>
[Accessed 17 February 1998]

DUCHAMP, Marcel
(b. July 28, 1887, Blainville, Fr.--d. Oct. 2, 1968, Neuilly). French artist who broke down the boundaries between works of art and everyday objects. After the sensation caused by "Nude Descending a Staircase, No. 2" (1912), he painted few other pictures. His irreverence for conventional aesthetic standards led him to devise his famous ready-mades and heralded an artistic revolution. Duchamp was friendly with the Dadaists, and in the 1930s he helped to organise Surrealist exhibitions. He became a U.S. citizen in 1955

"Duchamp, Marcel." Britannica Online
<http://www.eb.com:180/cgi-bin/g?DocF=micro/179/53.html>
[Accessed 17 February 1998

HAMILTON, RICHARD
(b. 1922, London, Eng.) English artist, may or may not have fathered pop. Designed jigs and tools during World War Two. Founding member of the Independent Group of the ICA.

Facts garnered by the author from various sources
Hamilton has not yet been included in Brittanica Online,
bringing into question its status as encyclopaedia,
since Hamilton is certainly a factual being

Mies van der Rohe, Ludwig,
original name MARIA LUDWIG MICHAEL MIES (b. March 1886, Aachen, Ger.--d. Aug. 17, 1969, Chicago, Ill., U.S.), German-born American architect whose rectilinear forms, crafted in elegant simplicity, epitomized the International Style (q.v.) of architecture.

"Mies van der Rohe, Ludwig." Britannica Online
<http://www.eb.com:180/cgi-bin/g?DocF=micro/393/13.html>
[Accessed 17 February 1998

Chronology

THE BRIDE STRIPPED BARE BY HER BACHELORS, EVEN
MARCEL DUCHAMP, PARIS/NEW YORK, 1915-23

ASSEMBLY OF ORIGINAL FROM PROTOTYPES IN OTHER MEDIA

THE BRIDE STRIPPED BARE BY HER BACHELORS, EVEN
MARCEL DUCHAMP, NEW YORK, 19??

ACCIDENTAL DESTRUCTION

The Definition of the Aura

The definition of the aura as a "unique phenomenon of a distance however close it may be" represents nothing but the formulation of the cult value of the work of art in categories of space and time perception. Distance is the opposite of closeness. The essentially distant object is the unapproachable one. Unapproachability is indeed a major quality of the cult image. True to its nature, it remains "distant however close it might be." The closeness which one may gain from its subject matter does not impair the distance which it retains in its appearance. [1]

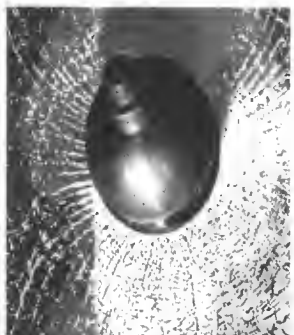
a "unique phenomenon of a distance however close it may be"

"distant however close it might be."

Broken Glass

Marcel Duchamp's Large Glass was shattered in transit. Perhaps it was only facetious resignation which prompted him to say that the cracks in the glass finished the work, enabling a connection between the bride and her bachelors, even if the work of reproduction had to be carried out by Richard Hamilton (for reconstruction is not quite reproduction), the shattering enabling contact but not fecundity. It would be interesting to find out if the chromed steel supporting the panels of glass was in any way deformed by the accident. The same Richard Hamilton was responsible for another reproduction of the bride et al. This was also mechanical, but in a different manner. He translated Duchamp's hand written notes, (themselves previously and painstakingly reproduced in exact facsimile, and published in The Green Box) which both explain and mystify the object to which they refer, into typographic form, published as a small green book. Walter Benjamin was of course not involved in any of these acts of production or reproduction. Nor did the automobile make anything but the briefest appearance, somewhere on the Jura-Paris road, with the spotlight child in attendance, in the notes, original, facsimile or typographic versions of The Large Glass. In terms of the real (and of course the reproduction) object only two elements appear which have anything to do with the automobile and that almost by default. Chromed steel and glass are the sticks and stones of the modern age, both in terms construction and the breaking of bones. In terms of this essay, this coupling will reappear, warped and in shards respectively. Significantly, I suppose, the rest of this story will mostly play itself out in London, the central subject a foreign object, the American automobile, standing out in marked relief against the background of Austin Minis. The central object of this article will be to be to explore the manner in which aura, or at least aura substitute becomes attached to mass produced mechanical objects, the transubstantiation of use value into cult value. Walter Benjamin will reappear in reverse.

"enabling a connection between the bride and her bachelors, even"



Inclinations of a Psycho Analyst

"Not only is its appearance and its usefulness unimportant... What is important is to sustain production and consumption." "if an industrialised economy values the process by which things are made more highly than it values the thing, the designer ought to have the training and inclinations of a psycho-analyst. Failing this he ought at least, to have the instincts of a reporter, or, more useful, of an editor."[2]

Quoting Arthur Drexler on the automobile,

"what was new and unique about the fifties was the willingness to accept a new situation and to custom build the standards for it...The market is made by the virtues of the object: the Eames chair and the Volkswagen, best-sellers in recent years, are concepts dating back to the thirties. Detroit cannot wait that long and this impatience

Richard Hamilton went on to explain,

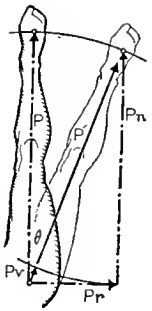
THE BRIDE STRIPPED BARE BY HER BACHELORS, EVEN
MARCEL DUCHAMP, NEW YORK, 19??

RECONSTRUCTED FROM ORIGINAL FRAGMENTS

BARCELONA PAVILION
LUOWIG MIES VAN DER ROHE, BERLIN/BARCELONA, 1928/29

TEMPORARY CONSTRUCTION

[1] footnote #5 The Work of Art in the Age of Mechanical Reproduction, Walter Benjamin
[2] Foreword to George Nelson, Problems of Design, (New York, 1957), pp vii-viii



is a clue to what we can expect in all the consumer industries. New products need market preparation to close the gap. Industry, and with it the designer, will have to rely increasingly on the media which modify the mass audience- the publicists who not only understand public motivations but who play a large part in directing public response to imagery. They should be the designer's closest allies, perhaps more important in the team than researcher or sales managers. Ad man, copywriter and feature editor need to be working together with the designer at the initiation of a program instead of as a separated group with the task of finding the market for a completed product. The time-lag can be used to design a consumer to the product, and he can be 'manufacture' during the production span. Then producers should not feel inhibited, need not be disturbed by doubts about the reception their products may have from an audience they do not trust."

the consumer can come from the same drawing board." [3]

Unfit Substitutes for the Sexual Object. Fetishism

"We are especially impressed by those cases in which the normal sexual object is substituted for another, which, though related to it, is totally unfit for the normal sexual aim...The substitute for the sexual object is generally a part of the body but little adapted for sexual purposes, such as the foot or hair or some inanimate object (fragment of clothing, underwear (car) which has some demonstrable relation to the sexual person, preferably the sexuality of the same. This substitute is not unjustly compared with the fetish in which the savage (sic) sees the embodiment of his god...Its association to the normal is affected by the psychologically necessary overestimation of the sexual object, which inevitably transcends everything associatively related to the sexual object. A certain degree of such fetishism is, therefore, regularly found in the normal, especially during those stages of wooing when the normal sexual aim seems inaccessible or when its realization is unduly deferred...The case becomes pathological only when the striving for the fetish fixes itself beyond such determinations and takes the place of the normal sexual aim; or again, when the fetish disengages itself from the person concerned and itself becomes the sexual object."[4]

The Fetishism of Commodities and the Secret Thereof

"A commodity appears, at first sight, a trivial thing" "But as soon as it steps forth as a commodity, it is changed into something transcendent."

"A commodity appears, at first sight, a trivial thing, and easily understood. Its analysis shows that is, in reality, a very queer thing, abounding in metaphysical subtleties and theological niceties. So far as it is a value in use (transportation), there is nothing mysterious about it , whether we consider it from the point of view that but its properties it is capable of satisfying human wants, or from the point that those properties are the product of human labor. It is as clear as noon-day, that man, by his industry, changes the forms of materials furnished by Nature, in such a way as to make them useful to him. The form of wood, for instance, is altered by making a table out of it. Yet for all that. The table continues to be that common, every-day thing, wood. But as soon as it steps forth as a commodity, it is changed into something transcendent. It not only stands with its feet on the ground, but, in relation to all other commodities, it stands on its head, and evolves out of its wooden brain grotesque ideas, far more wonderful than table turning ever was."[5]

THE BRIDE STRIPPED BARE BY HER BACHELORS, EVEN REPRODUCTION
RICHARD HAMILTON, LONDON, 1965/6

REPRODUCTION

"THE BRIDE STRIPPED BARE BY HER BACHELORS, EVEN"
RICHARD HAMILTON, LONDON, LONDON

TYPOGRAPHIC REPRODUCTION

The mystical nature of commodities does not originate in their use value.[6]

Tables, of course, have no brains, wooden or otherwise. Social critics, of course, do have brains, wooden or otherwise, as do artists, designers, consumers even. It is through the use of those brains that it is possible to see a table as brain-equipped, a commodity as a fetish, an automobile as desirable. All of these more or less perverse activities are dependent on the ability or proclivity to project onto gross matter, human qualities, to read into objects human values. The fetish qualities of commodities may well not originate in their use value, but the suitability of an object to become a fetish is probably related to its use value. If one accepts the notion that the normal is normative rather than a rare pathology, it would be difficult for even the most sophisticated team of consumer-designers to persuade the general (normal) populace to go out and buy bug spray based on its subliminal sexual content. Of course pheromones could be present both in bug spray and cologne. I do not doubt however that a niche market could be found. But the car is another thing.

Psychology of the Everyday Object

In 1952, a constellation of young creatives, and critics, began to gravitate towards one another, an informal subset of the ICA in London. Within the space of nine months they became, successively, the "Young Group", the "Young Independent Group" and the" Independent Group", with Reyner Banham as convener/secretary. Whether the ambiguity inherent in the name was intentional or not is not known, but it is fitting given the diversity of interests held by the members, and the divergent paths the various founders and their followers would beat. It is difficult to think in one breath of Pop Art and the New Brutalism as having bloomed in the same hothouse (until one thinks of James Stirling). The common ground appears to have been the desire to look at the world both "as found" and as found in the popular media. The world as found in England at that time was of course a world recently ruined, just beginning to embark on reconstruction after a war that had devastated Europe and parts of Asia and left the Continental United States with a phenomenal productive capacity and no real economic competitors. America had to send all those women who had built up the wartime industries home in order to consume all the commodities which the returning men were going to have to make in order to use all the surplus industrial capacity.

A new war of sorts; plowshares into swords, swords into silverware.

Analysis of a Fetished Commodity

"The artwork on this page is not a reproduction of an existing drawing. It was conceived and executed as a piece of "artwork" in the sense in which the term is used by technical artists and process engravers when referring to drawings made specifically for reproduction...Partly as a result of the Man, Machine and Motion exhibition, biased by the pop-art pre-occupation of the Independent Group and using directly some material investigated by Reyner Banham in his auto styling research, he had been working on a group of paintings which portray the American automobile as expressed in the mag ads...The main motif, the vehicle, breaks down into an anthology of presentation techniques...Pieces are taken from Chrysler's Plymouth and Imperial ads, there is some General Motors material and a bit of Pontiac. The total effect of Bug Eyed Monster was encouraged in a patronizing sort

HOMAGE A CHRYSLER CORP
RICHARD HAMILTON, LONDON 1957
HOMAGE A CHRYSLER CORP
RICHARD HAMILTON, LONDON 1957, COLLECTION .DUCHAMP PARIS

EXHIBITION, CRASHED CARS
JG BALLARD, LONDON, 19??, ICA?

VERSION FOR LINE REPRODUCTION

[3]Richard Hamilton, Persuading Image, Design, (London, February 1960.
[4]Sigmund Freud, Contributions to the Theory of Sex, The Basic Writings of Sigmund Freud, (New York, 1938), pp 534-535
[5]Karl Marx, The Critique of Capitalism, Capital, Volume One, The Marx- Engels Reader, R C Tucker Ed.(New York, 1978) pp 319-320
[6] Ibid.

of way. The sex symbol is, as so often happens in the ads, engaged in a display of affection for the vehicle. She is constructed from the two main elements- the Exquisite Form Bra diagram and Voluptua's lips. It often occurred to me while I was working on the painting that this female figure evoked a faint echo of the Winged Victory of Samothrace. The response to the allusion was, if anything, to suppress it. Marrinetti's dictum 'a racing car... is more beautiful than The Winged Victory of Samothrace' made it impossibly corny. In spite of a distaste for the notion it persists...

One quotation from Marcel Duchamp remains from a number of rather more direct references which were tried. There are also a few allusions to other paintings by myself."

Psychopathy of the Everyday Object

To return to Benjamin's definition of the aura as a "unique phenomenon of a distance however close it may be" represents nothing but the formulation of the cult value of the work of art in categories of space and time perception. Distance is the opposite of closeness. The essentially distant object is the unapproachable one. Unapproachability is indeed a major quality of the cult image. True to its nature, it remains "distant however close it might be." The closeness which one may gain from its subject matter does not impair the distance which it retains in its appearance. [7] What would be the status of the voluptuous woman perched seductively, a la Hollywood starlet on the bonnet, (or is that hood?), of a tumescent American car, if not unobtainable, at least to the presumably male, heterosexual American automotive consumer, if not to the advertising team. Desired, yet unapproachable, however close she may be. Also, a mechanically reproduced paper substitute for the real thing. But if one were to possess the object of her presumed affection, the car, that car, or at least one just like it, couldn't one perhaps possess a woman almost exactly like that one, just over there, just beyond the picture plane. I suppose this is nothing really new, but the conceptual compaction is stunning. Commodified libido as aura substitute, vehicle as prosthesis, which through repeated failure to achieve desired connection, becomes an end in itself, a fetish as understood by Freud, but prone to wear and tear, not to mention yearly stylistic redundancy, a new model year promising new hope, a fetish as understood by Marx. Karl, not Leo, not Groucho, come to mention it. This sort of conceptual hopscotch is of course dangerous. In confusing analogy between ideas with identity of ideas, it leads to reams of spurious cross-disciplinary cultural criticism the likes of this. I must at this point emphasize the analogy between this process and the process of fetishization, both are founded upon a confusion between the actual nature of an object and those things associated with that object. Criticism is of course read only by those already sympathetic, but advertising, and the commodities of mass consumption have a real market, and one often unaware of the motives of the producers, and of the imperfectly understood means at the disposal of the cross disciplinary teams attempting to design both desire and its perpetual unfulfillment. Things could go horribly wrong.

There could be an accident.

THE ATROCITY EXHIBITION
JG BALLARD, LONDON, 1970

CRASH
JG BALLARD, LONDON, 1973

THEMATIC REPRODUCTION OF THEMES
FROM ATROCITY EXHIBITION

Crash

It is exactly this territory which J.G. Ballard explores in the three works mentioned in the chronology of works. The Atrocity exhibition is a series of fragments about a series of fragmentary actions carried out, or possibly only imagined, by a series of protagonists. It is also possible that all those protagonists are merely the avatars of a single fragmented mind. Elizabeth Taylor, or at least the vastly enlarged pieces of her anatomy scattered on billboards is conflated with the landscape of London's western periphery. The location is the same in the novel "Crash", albeit without the presence of Taylor, but the themes are much the same. Potentially endless permutations of a miasma of confused desires. Sex, cars, sex in cars, between cars, with cars. Desire to become one with one's car in the ultimate conjunction between subject and object, a twisted heap of flesh and leather, blood and gasoline, steel and bone. And everywhere the sparkle of broken glass.

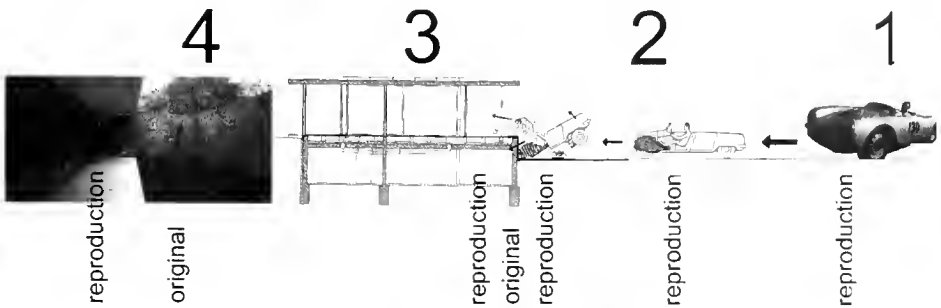
Broken Glass, again

The Barcelona pavilion is, like The Large Glass, like the Automobile, a mechanical work of art. It is also a reproduction, which is fortunate, for the original began to fall apart as soon as it was completed. It has leather seats. It also has large sheets of glass held in chromed steel frames. It has a certain unapproachable sensuality, it provokes desire.

On re-visiting it a glint of light caught my eye. The glass is cracked, the leather seats are showing signs of wear. It is no longer perfect, and its imperfections are the result of its interactions with the many visitors drawn to experience its reproduction aura. The damage wrought on it by its admirers, those bachelors of architecture, even as this is written both signifies enables a connection between its pristine conception and a fertile, albeit mundane reality. It is becoming ordinary, losing its distance.

An orchestrated collision

A reproduction of James Dean's Porsche speeds across the plaza. It slams into the travertine-clad concrete of the podium. The driver, an architect clad in black, catapults through the windscreen, through the plate glass wall, and is impaled on the Chromium plated steel of the Barcelona chair. George Kolbe's statue raises her arms to shield her face. As his lifeblood seeps out through the red velvet of the curtain, in which he has become entangled, the driver sees the glistening of myriad shards of glass on the black carpet, feels the leather against his face. He feels sublime. He is the fulfilment of design. He could have bought a ticket like the rest of us.



BARCELONA PAVILION
I .de SOLA-MORALLES, C.CIRICI

PERMANENT RECONSTRUCTION

CRASH
DAVID CRONENBERG,

CINEMATIC RE PRODUCTION

7 footnote #5, The Work of Art in the Age of Mechanical Reproduction Walter Benjamin

ARCHITECTURE, HISTORY AND THE EMBODIMENT OF SPEED:

Mapping the Spaces of Here and There

Lawrence Shapiro

"Travel is one of the best means for a society to maintain a permanent state of absent mindedness, which prevents that society from coming to grips with itself. It assists fantasy along mistaken paths; it occludes one's perspective with impressions; it adds to the wonder of the world, so that the world's ugliness goes unnoticed."[1]

A recent dinner table discussion turned from a comparison of the virtues of Web Search Engines for various kinds of searches to the commentary, only partially ironic, that actual geographic searches were best, because one achieved the greatest sense of having travelled somewhere. The complexity posed by the entertainment value of speed and the concomitant perception of travel without actual movement is a perfect analogue to ideology that convinces us that we are doing one thing while in fact we are doing quite another. We are held raptly in a state of attention—or distraction—as the Microsoft commercial asks: "Where do you want to go today?" The sense that the speed of travel offers a kind of mastery of time and space is echoed in another high-tech ad campaign by the chip manufacturer Intel. We're taken on an incredible journey inside the computer, to see its guts, the chip that drives the machine towards ever more powerful applications, greater speed, smoother access to eroticized images in vivid colors and rich digital sound, and images moving in increasingly life-like fashion. This animated journey reveals and explicates the architecture of the computer, domesticating it—this is not a mysterious black box, a threatening vortex of lost data and error messages to make the technophobe break out in cold sweats. The revelation of the interior of the computer seems to offer a kind of modernist architectural representation: its structure is honest and will explain itself, will demonstrate how it works.

A related series of ads: a team of Intel chip fabricators, clad in brightly-colored reflective suits dance to a disco beat as they make chips in a stage-set version of a dust-free manufacturing plant; in another version, the reflective suits cruise the city in their mini-van, emerging on an urban sidewalk as if to enter a trendy night-club. Definitely hip, the computer is not just for nerds anymore. The sense of empowerment that the computer offers is linked to the experience of speed and the understanding of movement leading to understanding and in turn to mastery. We can navigate these new spaces, surf the web, enter cyberspace, cruise the information superhighway. This is a quantum leap from the Yellow Pages advertisement that encouraged us to "let our fingers do the walking." Mobility is power, greater speed is greater control. The personal computer transformed—by market analysis, product development and promotion—into a user-friendly household object, marks a new milestone of the integration of technology and the logic of the workplace into the hours and spaces of domesticity and leisure.

The transformation of the new and threatening into the familiar recurs as one of the staples both of modern historical experience and of capitalist development. The mechanisms of this naturalization include among other clever slights of hand the construction of the new as inevitable. The marginalization of old images, objects and orders of signification goes hand in hand with

slogan of Microsoft Corp

u want
o go

progress but often not without resistance. For example, German history in the late 19th and early 20th century has been described as exhibiting an abnormal or indeed pathological adherence to an old order—to the authoritarian structures of monarchy, military and restrictive trade—which was central to the rise of fascism. Germany's belated nationhood and delayed but extremely rapid industrialization distinguished it from the normal formation of capitalist economies accompanied by parliamentary democracy witnessed in France and England. The problem, of course, as pointed out by Richard Ely and James Blackbourne in The Peculiarities of German History lies in presenting this path of development, especially economic development, as normal. Urbanization and industrialization certainly were rapid and traumatic in Germany; and the adherence to images of stability like *Fuhrer, Kaiser* and *Heimat* (Homeland) were signs of an anxiety about modernity that could be mobilized for violent, racist and nationalist causes. The fracturing of the image of stability that accompanied modernity, was universal, however, as were the social upheavals of migration and market-driven cycles of growth and economic collapse. Thus one senses the convergence of problems of historical representation and avant garde artistic production concerned with representing modernity and creating new forms consistent with modernity.

In this essay I examine change as trauma which requires, as Freud suggests in his essay "Mourning and Melancholia," that the energies cathected to the "lost object" be dissolved in order to be available for a process of recathecting, transferring attachment. Significantly the lost object need not be a person but may also be "some abstraction...such as one's country, liberty, an ideal and so on." The process of working through occurs through a lengthy process of reality testing, in which the subject's environment is re-mapped and found no longer to include the absent object. This process of detachment, if not successfully performed by a process of mourning results in a denial of the loss; the lost object is maintained as a fantasmatic form that leads not only to a denial of reality but also the potential for the subject to regress to earlier, primitive forms of object attachment. This model of subjective transformation and re-mapping of the relationship between self and environment offers a mechanism for understanding the complex process of adaptation to change if the new order cannot be adequately represented and navigated. In a sense, change is normalized, but presented as the source of significant trauma. Alexander and Margarethe Mitscherlich used a similar reading of melancholia in The Inability to Mourn as a mechanism for explaining collective processes of historical working through or failure to do so.[2] The Mitscherlichs describe a collective failure to detach from the allegiance to National Socialism among

post-war Germans. This took the form of Germans identifying themselves as victims of the traumatic defeat of 1945 and the loss of the *Fuhrer* ideal; characteristically this victim identification expressed itself as a repression of historical events including the proper recognition of issue of guilt and complicity in the Holocaust.

This reading of the traumatic disruption of an image of the world or of a sense of order derives in part from Frederic Jameson's concept of the cognitive map, which he draws in turn from Kevin Lynch's Image of the City. The cognitive map functions—as he suggests, quoting Althusser—as an analogy of ideology. That is, as a "representation of the subject's Imaginary relationship to his or her Real conditions of existence." Jameson continues: "Surely this is exactly what the cognitive map does in the physical city: to enable a situational representation on the part of the individual subject to that vaster and properly unrepresentable totality which is the ensemble of society's structures as a whole."[3] This formulation of situational representations that exist as fragmentary and diagrammatic images distilled and extracted from encounters with the complex matrix of physical spaces which are the stage for experiences of daily life posits an active process of mediation between the empirical landscape of objects and spaces and the internalized image of space. This process of mediation is an internalized image of an external landscape as a subjectively (rather than mimetically) constructed image. In short, what is at stake is an attempt to understand the construction of usable conceptions of place. These are, like usable histories, contingent formulations somewhere between cosmologies and theories of perception. They ultimately serve, above all else, to situate a subject in his relation to a set of external objects. This inquiry into the significance of cognitive mapping is crucial at moments when what promises to elucidate or empower in fact threatens to obscure and blur the structures of power and capital and to incorporate the individual into structures that may be neither legible nor benign.

I want to argue for the importance of an architectural examination of the anabolic construction and catabolic dismantling of the structures of daily life. This argument acknowledges the complexity of response to change, but sees change—in environment, social structure, code of representation or economic/productive system—as normal. Of particular interest here is the work of Siegfried Kracauer, whose analysis of the "surficies of cultural ephemera and marginal domains— hotel lobbies, dancing, arcades, bestsellers" are part of "a voyage to the 'new world' of modernity."[4] Kracauer delicatly straddles an embrace and negation of modernity to critique the excess of capitalist *Ratio* (instrumental reason) while still maintaining hope for the sort of enlightenment reason that can reveal the faults and inequities of its own structure. The essence of *Ratio* is clear in his indictment of technology which "becomes an end in itself, and a world arises that, to put it in vulgar terms, desires nothing other than the greatest possible technologizing of all activities... It knows only that space and time must be conquered by the power of the intellect."[5]

For Kracauer, travel and dance are two forms of popular entertainment that are central to a culture of distraction; both are concerned with movement and are elements of what he calls a "Cult of Distraction." His analysis of the repetitive motion of the chorus line of "Tiller Girls"

addressed the fragmentation of the individual and her reconstitution as part of rationalized whole in which each individual's form could not be distinguished. The epigraph above and the discussion of movement below describe the seductive power of motion and its capacity to blur the structures of modern life, a compensatory and insulating mechanism that naturalizes the motion of the machine while also obscuring the dependent relation of the individual to technological society. "The adventure of movement as such is thrilling, and slipping out of accustomed spaces and times into as yet unexplored realms arouses the passions: the ideal here is to roam freely through the dimensions. This spatio-temporal double-life could hardly be craved with such intensity, were it not the distortion of real life."[6]

This model of change as trauma is evoked not to defend romanticism, sentimentality, nostalgia or an anti-technological Luddism; but to challenge representations of progress. In the face of the incorporation of the individual into technological society, one wants all one's critical faculties engaged. As the redemption through technology presents itself: offering to collapse time and space, promising to unite us in one community, we should wonder about the social dimensions of this re-mapping of individual and environment. We can always ask: who benefits from change? And equally importantly, in whose hands does the power to represent the benefits of progress lie? Architecture has been centrally involved with the 20th century process of normalizing and representing the processes of technological change and modernity. The question of a moral position for architecture as a form of discourse with the power to articulate critical positions in relation to the allocation of resources and power remains a topic for another discussion. But certainly architecture has been used as an instrument of representing and enforcing power. The articulation of change as shock and as disruption of social fabrics, reveals the imbrication of spatial and architectural structures in the most basic responses to modernity. Foremost is the embodiment of progress in the architecture of International Modernism. The monadic quality of this linkage has obscured the possibility of a historical examination of the origins of modern architecture that doesn't accept its formal development as inevitable.

Architecture has clear status significations. The wealthy have the power to navigate the spaces of the city and indeed the world in comfort, and to commission the construction of—and to inhabit—spaces that serve to insulate them from the shocks of modern life. Others are faced with the specter of a hostile physical environment, as in the late 20th century blighted inner city, and a social and economic playing field on which they have neither the power nor the understanding to compete. History, and the production of architecture, produce victors and victims.

[1] Siegfried Kracauer, "The Little Shopgirls Go to the Movies," The Mass Ornament, translated and edited by Thomas Y. Levin, (Cambridge: Harvard Univ. Press, 1995) p. 299.

[2] Eric Santner extended this reading in his analysis of post-war German film, Stranded Objects.

[3] Louis Althusser, "Ideological State Apparatuses," in Lenin and Philosophy (New York, 1972), cited in Frederic Jameson, Postmodernism, or, The Cultural Logic of Late Capitalism (Durham, 1991)

[4] Mass Ornament, 20

[5] "Travel and Dance," Mass Ornament, 69

[6] Ibid., 68

AFTERWORD

Greg Russell

This afterword takes as its reference point an essay written by Leo Marx, professor in the program in Science, Technology and Society at MIT, entitled "Technology: The Emergence of a Hazardous Concept." The idea for this afterword evolved over the course of four meetings with Professor Marx. Quotes from Marx's article will be referenced on the side column to create a dialogue with the main text.

Quotes from "Technology: The Emergence of a Hazardous Concept" *Social Research*, Fall 1997.

Agency

An underlying theme this issue of Thresholds is the difference between 'Technology' and 'a technology.' Marx argues that speaking of Technology as a singular abstract noun is hazardous; hazardous in that, as an abstract noun, it has *agency*, which then overshadows and neglects more important forces like moral and political standards. One needs to look no further than the cover title of a recent New York Times Sunday magazine for an example of this hazard: "What is Technology Doing to Us?". It assumes that technology and not people who develop technologies drive and manipulate contemporary society.

Mitchell Schwarzer and Kevin Fellingham probe the issue of agency in their essays. Fellingham invokes "Walter Benjamin in reverse" to show how objects of mechanical reproduction can take on aura. An automobile or a reproduced canonic piece of modern architecture can have agency and Fellingham proposes that it is only through an accident or an imperfection that this aura or agency is 'shattered.' For Schwarzer, capitalist development and historic preservation form two halves of an urban morphological 'agency'. He raises the issues of the forgotten spaces and 'ghost wards,' which attest to an uneven growth cycle which is faster than the eternal past of the historic district, and slower than the eternal future of the capitalist development district.

Computers

Any discussion of contemporary technologies will revolve around the use and impact of the computer. Analogous to Marx's description of the impact of railroad technology at the turn of the 20th century, computer technology continues this transformation of society, not with sprawling physical infrastructure but with wireless 'nets'. William Mitchell states that computer technology is ubiquitous today and the discussion shifts from a dogmatic Do I or Don't I use the computer to How can I use this technology as a tool to achieve my goals. Megan Yakeley answers Mitchell's challenge and proffers an architectural design course using the computer to design and not just to draft and render.

Re-evaluating Sites of Obsolescence

Both Sung-ho Kim and Mark Bain address the spaces rendered obsolete in the wake of particular technologies: Bain transforms a vacated engineering laboratory, Kim takes advantage of the interstitial space between two elevated highways. While Bain "re-engineers" out-dated computer hardware taking advantage of their isolated electro-mechanical movements to create an acoustically charged space, Kim "re-cycles" out-dated cars letting

But how do we identify the changes in society and culture marked by the emergence of *technology*? I assume that those changes in effect created a semantic void, that is, a set of social circumstances for which no adequate concept was yet available -- a void that the new concept, *technology*, eventually would fill. It would prove to be a more adequate, apt referent for those novel circumstances than its immediate precursors -- words like *machine*, *invention*, *improvement* and, above all, the ruling concept of the *mechanic* [or *useful* or *practical* or *industrial*] *arts*. (967)

As for the *hazardous* character of the concept, at this point I need only say that the hazard is discursive, not physical. I am not thinking about weaponry, nor am I thinking about the destructive uses of other technologies; rather, I have in mind hazards inherent in, or encouraged by, the concept itself -- especially when the singular noun (*technology*) is the subject of an active verb, and thus by implication an autonomous agent capable of determining the course of events, as we constantly hear in countless variants of the archetypal sentence: "Technology is changing the way we live." When used in this way, I submit, the concept of *technology* becomes hazardous to the moral and political cogency of our thought. My argument, let me add, should not -- if sufficiently clear -- provide comfort to either the luddites or the technocrats. On the contrary, my hope is that it may help to end the banal, increasingly futile debate between these two dogmatic, seemingly irrepressible parties. (968)

Early in the industrial revolution innovations in the mechanic arts had been typified by single, free-standing, more or less self-contained mechanical inventions: the spinning jenny, the power loom, the steam engine, the steamboat, the locomotive, the dynamo, or, in a word, machines. But in Webster's time the discrete machine was replaced, as the typical embodiment of the new power, by a new kind of socio-technological system. The railroad was one of the earliest, most visible of these large-scale, complex systems in the modern era. A novel feature of these systems is that the crucial physical-artifactual, or mechanical component -- the steam locomotive,

for example -- constitutes a relatively small part of the whole. Thus, in addition to the engine itself, the operation of a railroad required: (1) various kinds of ancillary equipment (rolling stock, stations, yards, bridges, tunnels, viaducts, signal-systems, and a huge network of tracks); (2) a corporate business organization with a large capital investment; (3) specialized forms of technical knowledge (railroad engineering, telegraphy); (4) a specially trained work force with unique railroading skills, including civil and locomotive engineers, firemen, telegraphers, brakemen, conductors -- a work force large and resourceful enough to keep the system going day and night, in all kinds of weather, 365 days a year; and (5) various facilitating institutional changes, such as laws establishing standardized track gauges and a national system of standardized time zones. (972-3)

To speak, as people often do, of the "impact" of a major technology like the automobile upon society makes little more sense, by now, than to speak of the impact of the bone structure on the human body. But it is when we speak of the overall impact of *technology*, when the term putatively represents a discrete category of human activity, that its most hazardous consequences come into view. (981)

The chief hazard attributable to the concept of *technology*, as currently used, is the mystification, passivity, and fatalism it helps to engender. Today we invoke that term as if it were a discrete entity, and thus a causative factor -- if not *the* chief causal factor -- in every conceivable development of modernity. Although we cannot say exactly what that "it" really is, it nonetheless serves as a surrogate agent, as well as a mask, for the human actors who actually are responsible for the developments in question. Because of its peculiar susceptibility to reification, to being endowed with the magical power of an autonomous entity, technology" is a major contributant to that gathering sense, at the close of the millenium, of political impotence. By attributing autonomy and agency to technology, we make ourselves vulnerable to the feeling that our collective life in society is uncontrollable. The popularity of the idea that technology is the primary force shaping the postmodern world is a measure of our growing reliance on instrumental standards of judgment, and our corresponding neglect of moral and political standards, in making decisive choices about the direction of society. To expose this hazard is a vital task for scholars in the human sciences. (984)

the process of dissecting automobiles disseminate awareness of consumption and artistic production. In both cases the "obsolete" spaces are transformed into sites of creative discovery.

Systems

"There is a growing mountain of research. But there is increased evidence that we are being bogged down today as specialization extends. The investigator is staggered by the findings and conclusions of thousands of other workers - conclusions which he cannot find time to grasp, much less to remember as they appear. Yet specialization becomes increasingly necessary for progress, and the effort to bridge between disciplines is correspondingly superficial."- "As We May Think" by Vannevar Bush in The Atlantic Monthly July 1945

Rob Clocker, Derek Fisher and Wolfgang Ungerer address the current methodological trend to design via a systemic approach. This systemic approach to design seems to represent a way of thinking about design in a state of crisis. For Vannevar Bush, in 1945, as well as for the contemporary global citizen, this crisis manifests itself as feelings of being overloaded with information and not having enough time to assimilate it all. These theses diverge from traditional proposals in that they offer an alternative ways of dealing with the complexity of program by taking into account the temporal life spans of site, use, materials, etc. By addressing design in relation to systems and using "systems" as a way of filtering through the vast network of information, architectural design can begin to address this crisis problem. In this era of ubiquitous information (scholarly and mundane) devising a system by which to sift information is an important task; witness the rise and popularity of web search engines. For architecture then, the design process not only includes the design of a filtering device, but is also, in and of itself, a filtering process.

Lawrence Shapiro in his essay questions whether using a system (e.g. a cognitive map) is an accurate way to describe the complexity of modern life. Systemic design is a way of controling/defining the ground in which architectural design evolves, but can it address the complexity of the context, or as Tafuri would say, "the Plan"? A better question might be, "Should architectural design aspire to address the complexities of society or could the design actually allow complexity to be added, at varying speeds and at varying densities?"

History

Aron Vinegar points that issues of flexibility and variable design are not unique to the contemporary design discourse but have existed long before. Understanding the history of design decisions as well as the forces that inform those decisions helps to avoid giving specific technologies agency. As designers, it is essential to understand the historical framework underlying technologies in order to make critical, objective and creative decisions in an increasingly information saturated world.

photo credits

p 1 image from Derek Fisher's Master of Architecture thesis.

p 2-4 images and code from Rolando Mendoza.

p 5 images from Rob Clocker's Master of Architecture thesis.

p 10-16 photos from Camilio Jose Vergara, The New American Ghetto (New Brunswick: Rutgers UP, 1995).

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p 44-49 images from Wolfgang Ungerer's Master of Architecture thesis.

p 45 perspective view rendered by Ben Kou.

p 50-53 photos courtesy Mark Bain.

p 50-51 charts from H.Dupuis and G.Zerlett, The Effects of Whole Body Vibration, (Berlin: Spriner-Verlag)1986.

p 52-53 Sand patterns from Hans Jenny, Cymatics: The Structure and Dynamics of Waves and Vibrations, (Basel:BasiliusPress) 1967.

p 54-57 photos courtesy Sung-Ho Kim.

p 58 image of two car bumpers taken from Raymond Depardon's "Melrose Boulevard 1982" and modified by Kevin Fellingham

p 58-63 images of Duchamp artwork from Pontus Hulten, ed., Marcel Duchamp: Work and Life (Cambridge, MA: MIT Press) 1993.

p 58-63 images of Hamilton artwork from David Robbins, ed., The Independent Group: Postwar Britain and the Aesthetics of Plenty (Cambridge, MA: MIT Press) 1990.

p 60 photo of bride and car from Elliot Erwitt "Honolulu, Hawaii 1983"

p 70 image from Rob Clocker's Master of Architecture thesis.

call for submissions

What is Asian Architecture?
Asian Visual Culture?
Asian Art? Asian Aesthetics?
What are the cultural implications of consolidating styles under an overarching category like "Asian"?
or "Asian- American" ? "Asian-European"?
Who does it include? Who does it exclude?
What is the role of geographical distinctions?

Asia is the largest continent encompassing
44 million sq km (17 million sq mi), or
about 33% of the world's total land area
With over more than 60% of the world's total population
(+3 3 billion people), Asia is diverse, and
divided into a complex cultural mosaic of language,
race, religion, politics, economics, and cultural origins
The European-Asian border is an imaginary zigzag
down the spineof the Ural Mountains,
through the Caspian Sea, Caucasus Mountains, and Black Sea
The boundary dividing Asia and Africa is generally
placed along the Suez Canal,
and the boundary between Asia and
Australia is usually placed
between the island of New Guinea and Australia

How have Chinatowns and urban "Asian" districts all over the world helped or hindered the integration of Asian peoples into their host countries?
What makes a Chinatown worth preserving but not the central district of Beijing?

Suddenly Chinatowns are being re-invented and refurbished
Garish-coloured dragon-headed lamp-posts and
red plastic pagoda-topped phone boxes are everywhere
But Chinatowns were not always such privileged and protected spaces
For most of this century white communities all over the industrialized
world continued the erasure, eradication, and demolition of Chinatowns
]] http //www hku hk/complit/staff/lee_diaspora htm
Huge swaths of Beijing are being cleared by real-estate developers
to make way for high-rise apartments, office buildings and shopping centers
The familiar syndrome of urban renewal is drastically
changing the face of an ancient city within a few years Within a few years
around 90 percent of the old neighborhoods will be cleared
]] New York Times March 1, 1998

What is the difference between Internationalism and Multiculturalism?
Is it possible to subscribe to one and not the other?
Is academe really responsible for the whole mess?
Is it possible to re-evaluate colonial and post-colonial agendas along similar lines?

International - what a guileless, friendly word
As a kid in the sixties, I remember drinking up everything international
House of Pancakes! "Come in!" international people always seemed to be saying
"We don't care where the hell you're from Have some flapjacks!"
Then, as internationalism waned in the self-centered seventies,
a new aesthetic called multiculturalism washed up on the dreary beaches of academe
Unlike internationalism, which viewed the world through
the rose-colored lens of global brotherhood, multiculturalism
was concerned about making sure everyone got a piece of the pie
Unlike international people, multicultural people seemed
to spend much of their time hurling things at each other
and fighting over gristly little bits of grant money
]] *Depth Takes a Holiday* by Sandra Tsing Loh

Is it possible for the media to marginalize a group of people unintentionally?
Does pluralism ultimately bespeak of a wider cultural phenomenon that allows for a watered down version of hegemony called "identity"?
What kinds of power do universities exert on culture as a whole?
What is the role of history and does it matter who writes it?

In 1784, Empress of China arrived in Canton, China,
from New York, thus heralding the opening of China Trade
Chinese sailors, recruited by the New England merchant ships
engaging in China Trade, which flourished between late 18th century
and mid-19th century In fact, in 1798 a 19 years old Chinese sailor named
"Chow" was buried in the Boston Common Burial Ground
after falling to his death from the mast of the trade ship, Mac of Boston
Since the early 19th century, New England has been
the educational Mecca for Chinese students and scholars
Yung Wing, a 1854 graduate of Yale University,
became the first Chinese to receive a degree from an American college,
Ko Kuen-Hua, an official in the Ching court,
became the first Chinese faculty in Harvard University in 1879
]] from *The Chinese in Massachusetts* by Doris Chu
]] http //yerkes mit edu/ChinaTown/time html

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deadline 10.24.98

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and a two sentence bio of
the author(s)
for publication.
Essay text is limited to
2500 words.
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